# OPHTHALMOLOGY and ALLIED SCIENCES

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1. Mayer, L. L.: Arch. Ophth. 39:232, 1948.

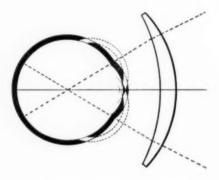
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### **FOREWORD**

The objective of the Quarterly Review of Ophthalmology is to bring together in one publication concise but authoritative abstracts of current articles on ophthalmology, according to an all inclusive plan which will include all special, state, and national journals as well as the bulletins of clinics, hospitals, etc., and the transactions of meetings. This will embrace both the domestic and foreign literature.

To assist the reader to locate quickly the articles of current interest all data will be classified and published according to the following systematic plan:

- Anatomy, Embryology, Heredity, Development and Nutrition
- Optics, Physiology and Psychology of Vision.
- 3. Physiology, Chemistry and Biochemistry of the Eye
- Pathology, Bacteriology and Immunology
- 5. Diagnostic Methods of Examination Biomicro-copy and Photography
- 6. Ocular Movements and Motor Anomalies. Nystagmus, Reading Disability
- Anomalies of Refraction and Accommodation, Contact Lenses
- Conjunctiva
- 9. Cornea, Sclera and Tenon's Capsule
- 10. Anterior Chamber and Pupil
- 11. Uvgal Tract and Sympathetic Ophthal-
- 12. Crystalline Lens
- 13. Vitreous Humor
- 14. Retina
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- Fields
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- Wiscellaneous
- 33. Book Reviews
- Announcements

In each section there will be published a series of annotated references under the heading, "References to Current Articles." To save the reader's time and also to assist in the compilation of bibliographies these references will invariably refer to articles of an academic nature or those making similar reports to abstracts recently published on the same subject. A cumulative index in the concluding numbers of each volume will provide further aid in locating specific references. Constructive criticism will be appreciated.

CONRAD BEREYS, M.D.

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# OPHTHALMOLOGY

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### QUARTERLY REVIEW

of

### OPHTHALMOLOGY AND ALLIED SCIENCES

Volume 5



Number 3

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### 1. Anatomy, Embryology, Heredity, Development and Nutrition

Congenital Blindness (Pseudoglioma) Occurring as a Sex-linked Developmental Anomaly. W. M. G. Wilson, Canad. M. A. J. 60: 580-84, June 1949.

Cases of developmental ocular arrest are traced in six generations of an Indian family. Five blind male children were examined, three eyes were obtained for sectioning. The sections showed the appearance of pseudoglioma, with extensive detachment of the retina. The cases were so placed in the family that the disease could be considered a sex-linked, recessive characteristic. 5 references. 4 figures.

Congenital Hypoplasia (Partial Aplasia) of the Optic Nerve. Bourne Jerome, M.D. and H. Walter Forster, Jr., M.D., Philadelphia, Pa. Arch. Ophth. 39: 669-72, May 1948.

Two cases of a rare congenital anomaly are reported, and a brief review of the embryology of the optic nerve is given. Two possible types of developmental abnormality are mentioned: (1) failure of the mesoderm to grow into the fetal fissure, resulting in absences of retinal blood vessels and hence aplasia of the optic nerve; (2) failure of the ganglion cells to develop, resulting in hypoplasia of the optic nerve. Both cases presented are of the second type, i.e. hypoplasia with retinal vessels intact. Vision was very markedly reduced in both cases. 3 references.

The Optic Canal (Le Canal Optique). N. Blatt and M. Athanasiu, Bucharest, Rumania. Rev. oftal. Rumania, 1: 47-109, July-Sept. 1948.

In order to carry out an extensive study of the normal aspect of the optic canal on a large number of skulls, the collection of the Institute of Bucharest, which includes 10,000 skulls of adults and children, was used. From this series, 136 skulls were selected at random, and complete measurements were obtained. The optic canal starts at the orbital foramen and is equal to it in diameter; the canal then opens as a funnel axially flattened in the cranial foramen. The direction of the optic canal is tangential to the

inferolateral rim of the orbit in 73% of the specimens, and inside the orbit in 27%. The endocranial foramen has a mean height of 4 to 4.5 mm, in 48% of the specimens, and an average width of 6 mm, in 36%. The shape is that of a slightly deformed ellipse, with a horizontal larger diameter in 45% of the specimens. 60 references. 39 plates.

Bilateral Microophthalmos with Orbital Cyst. D. R. Campbell, M.B. Proc. Roy. Soc. Med. 41: 722, Oct. 1948.

The case is reported of a congenitally blind girl who came for treatment of cysts of both eyes when 18 years of age. The right cyst was in the lower lid, which was distended and painful. The cyst was removed from each eye and a good conjunctival layer was left with a central hole corresponding to the normal limbal margin. Small artificial eyes were fitted. The left cyst was a rudimentary eye with primitive cornea, pigmented uveal tissue, and tissue corresponding to the lens. The right cyst showed primitive retinal tissue and the optic nerve. A patch of neural tissue was found posteriorly and another patch outside the rudimentary eye. O references.

### 2. Optics, Physiology and Psychology of Vision

The Functional and Anatomic Differences between the Nasal and Temporal Parts of the Retina. The Pressure Phosphenes Used for Determination of the Peripheral Boundaries of the Visual Field. *P. Broendstrup*, *The Community Hospital*, *Copenhagen*, *Denmark*. Acta. ophth. 26: 351-62. Fascia 3, 1948.

In plotting the visual field the drop in perception is usually abrupt on the nasal side and gradual on the temporal side. The periphery of the region is marked by weak perception, which increases in strength toward the center. Dark-adapted eyes show the same field-pattern. The difference in length between the peripheral arcs of the nasal and temporal zones is only 3 mm., which might account for a 20 degree but not for the 45 degree difference between the respective field arcs. Structurally, the nasal ora serrata are larger and coarser than the temporal counterpart. This, however, does not explain the difference in directional perception. The cone density is 5,000 and 4,000 per sq. mm., respectively; rod density, 160,000 and 35,000 per sq. mm. Individual structural variations are minute. During the embryologic life the nasal portion dominates over the temporal part of the retina.

In the experiments pressure was exerted, via the Bowman lacrymal duct no. 2, upon various points of the sclera corresponding to the nonoptical portion of the retina. The horizontal and vertical, as well as the two oblique meridians (10.5 to 4.5 and 1.5 to 7.5 o'clock) were explored. Momentary pressure produced no phosphene impression in the cortex. Prolonged minimal pressure at a certain point in the anterior part of the sclera showed a clearly outlined phosphene. Slight individual variations were noted. Hyperopia or myopia had no effect. Superimposition of the perceptional and the phosphene field showed coincidence in the posterior and anterior

regions. Laterally, the temporal boundaries of the phosphene field were within those of the perceptional field. Nasally, the perceptional ability was lower toward the periphery, hence the corresponding boundaries lay within those of the phosphene field. This shows that pressure releases phosphenes peripherically in the nonoptical part of the retina. The marginal zone is, however, not sensitive to pressure. 16 references. 2 figures.

Studies in Physiologic Optics (Physiologisch-optische Studien). A. V. Tschermak-Seysenegg, Prague Physiologic Institute, Prague, Czechoslovakia. Docum. ophth., Gravenh. 2: 10-91, 1948.

A contrastometer is suggested which functionally corrects the defects in the retinal image produced by the eyes own refractive imperfections (spherical and chromatic aberration, diffraction and polarization of light). This apparatus was constructed by Zeiss but was destroyed in an air raid. It is recommended to ophthalmologists for the functional measurement of image defects in various eye diseases. Too much attention in the past has been allotted to the purely mechanical aspects of ocular functioning.

Other practical applications suggested (the author admits that his suggestions may be capable of improvement) are: (1) a form of flash-protection goggles with rotating polarizing surfaces; (2) an apparatus for the testing of the neutral coloration of lighting sources; and (3) the alletrop, or mechanism for the testing of visual sensory fusion in stereoscopic vision. The great practical importance of the study of the physiologic aspects of ocular functioning is noted, and it is suggested that this work should properly be the task of a brotherhood of international scientific groups.

The Physiological Basis of Visual Acuity. Virginia L. Senders, Wellesley College, Wellesley, Mass. Psychol. Bull. 45: 465-90, Nov. 1948.

The chief preoccupation of the investigator in the field of visual acuity has been the size of the minimum angle, and the effect of various stimulating conditions upon this minimum size. Among the most important of these variable stimulating conditions is intensity of illumination. Many of the values found for different types of targets have been considered, and the point is made that the order of magnitude of the measure depends to a large extent upon the character of the visual target used. The main purpose of these measurements has been to determine the nature of the physiologic processes underlying visual acuity. The idea that the basis of resolution was the separation of two stimulated cones by one unstimulated cone has been shown to be inapplicable, and measurements a good deal finer than the width of a single cone have been presented.

Visual acuity varies in a systematic way with an increase in the intensity of the stimulating illumination, and this systematic variation must be accounted for by any complete theory of visual acuity. Two types of theories have been discussed: a theory of visual acuity based on peripheral processes, and theories which consider events in the retina, optic tract and

brain. In attempting to determine the basis on which an observer makes a discrimination of a small angular separation, it is no longer possible to consider nothing more than a distribution of intensities on the retina. Nervous processes, as discussed by Marshall and Talbot, are certainly involved. It is the problem of further experimenters to investigate the nature and influences of these nervous processes by tests designed for that purpose. 48 references.

A Study of Some Aspects of Peripheral Visual Acuity. Richard Feinberg, College of Optometry, Pacific University, Forest Grove, Ore. Am. J. Optometr. 26: 49, Feb. 1949, and 26: 105, March 1949.

A study of the decrement of peripheral visual acuity in 8 primary meridians at increasing distances from the point of regard was undertaken in this research. Apparatus consisting of tangent screens at right angles and at 20 foot distances from the subject, a half-silvered mirror, and an electronic illumination timer, was constructed to insure conditions of photopia, constant fixation, and absence of cues in the presentation of the peripheral targets. Landolt rings from 0.2 to 2.0, decimal visual acuity, were used as targets. These were presented a sufficient number of times at each point so that data could be established which, after correction for guess, could be used in constant process. By means of the Urban-Mueller tables the limens for the point of regard and for each meridional point at increasing angular distances from it were derived. Curves for the data of each of 8 subjects, ages 22 to 36, were computed. Composite data for the group were likewise studied.

The data obtained in this study indicate that peripheral visual acuity tends to decrease at increasing distances from the point of regard more rapidly than indicated in previous studies. It was observed also that peripheral visual acuity follows the curve of the retinal √ cones / mm.² closely, and that the variance of meridional peripheral visual acuity thresholds decreases in relation to the distance away from the point of regard. Individual differences in maintaining levels of peripheral acuity are pronounced. 40 references. 6 tables. 12 figures.—Author's abstract.

The Relationship of Refractive Error to the Speed of Perception of Objects and Words. *Thomas H. Eames*. Bull. Mass. Soc. Optometr. 29: 149-51, Feb. 1949.

Distinction is made between the perception of form and color and that of words. A group of 100 children (ages 5 to 17) was studied to determine the influence of refractive errors upon the perception speed of objects and words. The correlation of refractive error with (1) the speed of object perception, as measured by the author's tachistoscope, was + 0.54 and with (2) the speed of word perception was + 0.16. This indicates a moderately significant relationship in the first case, but practically none in the second case. Those cases having ametropia of various degrees were studied further to determine the influence of the refractive correction upon the increment in the speed of object perception, correlated with refractive error to the extent of + 0.46. The increment in speed of word perception had a correlation

of + 0.50. This shows some correspondence, but does not indicate what degree of ametropia is important as a key point beyond which increment is more or less likely to result from correction by means of lenses. By further analysis of the data, the author concluded that the correction of refractive error of 1 D. or more is likely to result in improved perception speed in an important number of cases.—*R. E. Bannon*.

The Effects of Atmospheric Scattering of Binocular Depth Perception. Glenn A. Fry, C. S. Bridgman and V. J. Ellerbrock, School of Optometry, Ohio State University, Columbus, Ohio. Am. J. Optometr. 26: 9, Jan. 1949.

Under ordinary conditions stereo cues aid in the judgment of the relative distance of objects within a limited distance from the observer. For the typical observer an object at 400 meters cannot be discriminated from one at an infinite distance on the basis of stereo cues alone. On the other hand, aerial perspective which is dependent upon atmospheric scattering operates as a cue to distance only at great distances. A stereoscopic range finder extends the range in which stereo cues are useful for the judgment of distance so that it overlaps the range in which aerial perspective is effective. Thus we have a situation in which both types of factors are operating simultaneously.

Using a laboratory arrangement which simulates the range finder situation, an investigation was carried out to determine the effect of changing the contrast of the target on its perceived distance. This was measured by moving a high contrast reticle in a fore and aft direction to make it appear to lie in the same plane. At low levels of contrast for the target the high cantrast reticle has to be further from the observer than the target in order to be seen at the same distance. 2 references. 4 figures.—Author's abstract.

Studies in Space Orientation. III. Perception of the Upright in the Absence of a Visual Field. H. A. Witkin, Brooklyn College, N. Y. and S. E. Asch, Swarthmore College, Pa. J. Exp. Psychol. 38: 603-13, Oct. 1948.

In earlier studies of this series the effect of displacing the surrounding visual field upon perception of the upright was investigated. The present study is concerned with perception of the vertical and horizontal upon complete removal of the visual field. With the position of his body varied systematically, the subject, in a completely darkened room, was required to adjust a luminous rod to the true vertical and horizontal. Judgments were found to be very accurate when the body was upright, but errors appeared as soon as the body, or even the head alone, was tilted. The largest errors occurred when the body was horizontal, which was the most extreme displacement employed. Successive judgments proved to be quite variable, moreover, when the body was tilted. It would thus seem that the postural factors provide an adequate and stable basis for judging the vertical and horizontal when the body is upright, but not when the body is tilted. The errors made with head or body tilted were systematic in their direction. With small tilts, the

rod tended to be displaced opposite to the body, and with large tilts, toward the body. These are the long known E-phenomenon and Aubert-phenomenon, respectively. These phenomena are eliminated at once upon introduction of a visual field. 8 references. 3 tables.

Studies in Space Orientation. IV. Further Experiments on Perception of the Upright with Displaced Visual Fields. H. A. Witkin, Brooklyn College, N. Y. and S. E. Asch, Swarthmore College, Pa. J. Exp. Psychol. 38: 762-82, Dec. 1948.

The effects of visual frameworks of different tilt and of different bodily positions upon perception of the upright were investigated in 53 adult subjects. A simple luminous frame contained in a completely darkened room constituted the visual field. Within the frame was a luminous rod which the subject adjusted to vertical and horizontal positions. Tilting of the frame caused a shift in the perceived upright in the direction of the frame. The influence of the frame was smaller with body upright than with body tilted. Individual differences were found. There were subjects who, despite the tilt of the frame, brought the rod close to the true vertical and horizontal; at the other extreme subjects perceived the tilted frame as upright, and aligned the rod with it. That these modes of perceiving the upright are characteristic of each individual is indicated by the substantial correlations obtained in performances under the different conditions. Differences were also observed in the ease with which subjects arrived at their judgments. A comparison of the results of the present and preceding studies indicates that the effect of the visual field upon the perceived upright tends to be stronger and more consistent as the field is more richly articulated. 3 references. 1 table. 3 figures.

Some Distortions of Space. Les F. Madigan. Bull. Mass. Soc. Optometr. 29: 251-53, May 1949.

Monocular clues for space perception including color, sharpness, apparent size, overlay, perspective, shadows and parallax are reviewed briefly. The basis of binocular space perception is the disparity in images due to lateral separation of the two eyes. A combination of both monocular and binocular clues constitutes the resultant perception in people with binocular vision. Testing for spatial distortion due to binocular clues may be accomplished only when monocular clues have been eliminated as, for example, in the "Leaf Room." Three cases are cited which describe the binocular spatial distortions and associated symptoms. The author urges a wider application of corrective procedures as much more knowledge is gained about visual space and its measurement.—R. E. Bannon.

Aniseikonia and Binocular Vision. Robert E. Bannon, Columbia University, New York, N. Y. Am. J. Optometr. 26: 240-50, June 1949.

The close connection of the ocular sensorial and motor apparatus as the basis of binocular vision is briefly reviewed. There are usually two or more etiologic factors which contribute to the impairment of binocular vision. These are summarized as: (1) mechanical factors; (2) innervational factors; (3) fusional deficiency and (4) sensorial anomalies.

This paper is concerned with the role of aniseikonia as one of the sensorial anomalies of binocular vision. The visual sensations from the two retinas must have nearly equal weight in order to influence the fusion movements properly. Aniseikonia-like unequal visual acuity, differences in illumination between the two eyes, and unequal prismatic effects of anisometropic corrections impair the fusion faculty. Several cases histories which illustrate the influence of aniseikonia as a factor in comfortable binocular vision are presented. 8 references.—Author's abstract.

The Electrical Response of Frog Eyes to Prolonged Illumination. Verner J. Wulff, University of Illinois, Urbana, Ill. J. Cell. and Comp. Physiol. 32: 31-43, Aug. 1948.

Dark adapted curarized frogs and the posterior enucleated half of excised eyeballs were exposed to illumination of various intensities. Potential changes were measurable across the intact eyeball, cornea to fundus, or across the posterior enucleated half of the eyeball, vitreous to fundus. The orientation of the potential changes were such that the cornea or vitreous became increasingly electropositive to the fundus. By measuring the potentials with a type K potentiometer, the measurements were limited to very slow changes of potential. Measurements were made across intact eyeballs in immobilized (0.6 mg. d-tubocurarine) frogs and across enucleated posterior halves of excised eyeballs in relation to intensity of light.

The potential across the eyeball of intact animals increased rapidly in the first minute after onset of illumination, levelled off after two to four minutes, was maintained during illumination, the longest period being 60 minutes, and fell to a lower resting level when illumination ceased. The magnitude of the response rose with increasing intensity of illumination, conforming to the responses of other photoreceptors and to other components of the frog retinal electric response. The results support the view that the retinal electrical response to illumination is the effective stimulus to activity in the nervous structures of the optic path. The slow potential originates in the retinal photosensitive layer. 15 references, 3 figures.

### 3. Physiology, Chemistry and Biochemistry of the Eye

Circulation of the Eye (A szem vérkeringése). F. Kiss, Anatomical Institute, Budapest, Hungary. Szemészet 86: 1-20, March 1949.

The vascular system of human and rabbit eyes was studied after injection with India ink. The iridal net consists chiefly of veins; it may be considered as the heating system of the eye. In the ciliary body 2 systems are to be found: (a) vessels with wide lumen in the ciliary processes, representing the filtering system; (b) so-called ciliary plexus, built up by vessels with narrow lumen. The latter absorbs the intra-ocular fluid and acts as a

second capillary system. Operative procedures free the absorptive surface of the plexus. The normal circulation of the human eye is in a state of lability; if tension rises, the trans-scleral veins passing obliquely are compressed and a vicious circle is developed leading to rising pressure. The circulatory system of the eye resembles that of the cavernous body of the penis. Increased arterial inflow has to be stressed as an exciting factor in producing glaucomatous attack. Glaucoma should be explained on the basis of neuro-vascular theory.—S. de Grósz.

The Pupillary Near Reflex. Elwin Marg and Meredith W. Morgan, Jr., University of California, Berkeley, Calif. Am. J. Optometr. 26: 183-98, May 1949.

In previous studies, conflicting results concerning the basis of the pupillary near reflex have been due primarily to the treatment of convergence as an indivisible function rather than one divisible into 4 components; fusional, accommodative, proximal and tonic. In this study, retinal illumination was kept constant by the flicker standard and infra-red photography was used for pupillometry. Convergence and accommodation functions with pupillary diameter were taken on a haploscope in a series of 5 experiments with 5 subjects and the following conclusions were drawn:

- 1. Pupillary diameter as a function of accommodation is linear although in some cases only after about the first diopter.
- 2. Pupillary diameter as a function of accommodative convergence is linear.
- 3. Pupillary diameter when it is a function of fusional convergence is linear.
- 4. These linear functions may be abbreviated as is the ratio of accommodative convergence to accommodation, AC/A. Thus:

Re	ntio Abbr	eviation M	ean Value Units
	Accommodation Accommodative Convergence Fusional Convergence		$\begin{array}{cc} 0.30 & \text{mm./D.} \\ 0.055 & \text{mm./} \Delta \\ 0.052 & \text{mm./} \Delta \\ \text{or zero} \end{array}$

- 5. A psychic proximal factor in the pupillary near reflex, direct and/or with proximal convergence, is indicated.
- 6. Under normal conditions the pupillary near reflex is essentially elicited by accommodation. In 2 of the 5 subjects, fusional convergence plays a minor role, about 1/3 of the total effect; but in the other 3 subjects fusional convergence has no pupillary effect, accommodation alone giving the constriction of the pupil.
- 7. It is proposed that the pupillary fusion reflex of Schubert and Burian may be simply a manifestation of the pupillary near reflex. 25 references. 2 tables. 10 figures.—Robert E. Bannon.

### 4. Pathology, Bacteriology and Immunology

Bacterial Flora in Infants Encountered at Time of Delivery. A Study of One Hundred Cultures from the Eyelids. H. Charles Franklin, University of Tennessee College of Medicine, Memphis, Tenn. Am. J. Obst. & Gynec. 56: 738-42, Oct. 1948.

The obstetrician and pediatrician are both interested in the incidence of organisms from the mother which might cause ophthalmia neonatorum in the newborn infant. As a method of demonstrating this bacterial flora, 100 cultures were taken from the eyelids of newborn infants immediately after birth. Nearly all of the mothers were staff patients; 79% were Negro. They were unselected, were prepared for delivery in the usual manner. The cultures were taken before the umbilical cord of the infant was cut, to rule out any possible contamination other than from the mother. A sterile swab was wiped across the eyelids along the line of approximation of the eyelid margins. The eyes were closed at the time. This was done on each eye and the swabs put in a tube of nutrient broth. Cultures taken at night were kept in a refrigerator for plating the following morning. The bacteriologic procedures employed were those commonly used.

Ninety-six % were positive; 38% were positive for 1 organism; 46% for 2 organisms; 11% for 3 organisms; and 1% for 4 organisms. A total of 167 organisms was isolated in the 96 positive cultures. Staphylococci, Escherichia coli, and Streptococci accounted for approximately three-fourths (76.5%) of the organisms encountered. Twenty-six varieties of organisms were found. Of the total organisms isolated, 15.0% were anaerobes and 4.8% were facultative anaerobes, making a total of 19.8% showing culture preference for anaerobic conditions. Of the Staphylococci isolated, 59.2% were nonhemolytic and 40.8% were hemolytic. Of the streptococci identified, 44.4% were nonhemolytic and 55.6% were hemolytic. Only one organism encountered belonged to the Neisserian group and this organism did not give a typical fermentation reaction for the gonococcus.

In this series, cultures were taken from the external surface of the eyelids rather than from the conjunctivas. This method was used to demonstrate both the bacterial flora present during parturition and as many varieties of organisms as possible which might contaminate the eyes of the newborn before, during, or after delivery. It is probable that the incidence of *E. coli* is made high by contamination from the perineal region. These results demonstrate how the birth canal and, probably to a lesser extent, the perineal region serve as a source of contamination for the eyes of the newborn infant. 5 references, 4 tables.—Author's abstract.

Experimental Investigation of the Pathogenicity of Diphtheroids Isolated from the Human Conjunctiva. Charles Weiss, Ph.D., M.D., Philadelphia, Pa., Marian C. Shevky, A.B. and Isabella H. Perry, M.D., San Francisco, Calif. Arch. Ophth. 40: 23-38, July 1948.

This study was undertaken to test the assertion of Axenfeld and others that diphtheroids are non-pathogenic when introduced into the eye from the conjunctiva during intra-ocular surgery. Pathogenicity in special circumstances was tested, as in the presence of mucin. Search for a soluble toxin from the diphtheroids was made.

Mucin, manufactured from the glands in the conjunctiva, prolongs the life of bacteria and reduces bacteriolytic power of serums. Cultures of diphtheroids from the conjunctiva were made. The technics are described. When cultivated in a menstrum of mucin it was found that, like other bacteria, diphtheroids thrive. This was in sharp contrast to their growth in saline. In vivo, suspensions of diphtheroids in mucin caused an earlier, more intense and more persistent inflammation than similar doses made up in saline. Albino rabbits were used in the tests. Inoculations were intra-ocular. No untoward effects were observed from subconjunctival or intradermal injections into rabbits, or after intracerebral or intra-abdominal innoculation of mice. Sterile filtrates of cultures of diphtheroids were inoculated into the anterior chamber of 9 rabbits. Iris and cornea were moderately inflamed in 7 rabbits. These filtrates were not hemolytic for rabbit, sheep, or human erythrocytes. No signs of necrosis were seen after intracutaneous or subconjunctival injection into rabbits or guinea pigs. Moreover, intravenous injections into these animals and intra-abdominal and intracerebral inoculation of white mice were also harmless.

The conclusion is that diphtheroids, almost constantly present in normal and inflamed conjunctiva, may exert injury when introduced into the interior of the eye. 27 references. 3 tables. 3 figures.

Infection of the Human Eye with Cryptococcus Neoformans (Torula Histolytica; Cryptococcus Hominis). A Clinical and Experimental Study with a New Diagnostic Method. Charles Weiss, M.D., Ph.D., Isabella H. Perry, M.D. and Marian C. Shevky, A.B., San Francisco, Calif. Arch. Ophth. 39: 739-51, June 1948.

Only 1 case of orbital infection due to *Cryptococcus neoformans* has appeared in the literature, although over 100 cases of the disease have been reported. In the case presented, the patient's poor vision which, in spite of prompt attention from 3 ophthalmologists, resulted in lost vision in one eye and enucleation of it before the diagnosis was suspected. No culture was made of the contents of this eye and the diagnosis was still missed. It was not until culture was made of the fluid in back of a retinal detachment in the second eye that the condition was diagnosed.

Since identification of the causative organism of this fatal disease depends largely upon the demonstration of its pathogenicity, a study of a suitable animal is of great importance. Rabbits were used for intra-ocular injections of the cultures in this study. Characteristic changes were seen on the fifth to seventh day, and were fairly well established by the seventeenth day. The changes included grossly: opaque lower part of anterior chamber; plastic iritis, and pannus on corneal surface. Histologically, the exudate contained polymorphonuclear cells and monocytes. On the posterior corneal

surface a delicate festoon of rosettes appeared. In the center of each rosette was a cryptococcus surrounded by the inflammatory cells. The organisms were engulfed inside macrophages. This study emphasizes the importance of early diagnosis. 26 references. 3 figures.

# 5. Diagnostic Methods of Examination, Biomicroscopy and Photography

Measurements of the Thickness of the Cornea. G. von Bahr. Acta ophth. 26: 247-66, Fasc. 2, 1948.

A modification of the Blix microscope for the purpose of in vivo determinations is reported. The principle is essentially the same as used by Blitz: two rays pass from the right and left sides of a common perpendicular to the posterior and anterior surfaces of the cornea and, after reflecting from both planes, are made to converge at one point. Here a simultaneous, instead of successive, adjustment has been made possible. The new auxiliary device consists of 2 thin plates of plane glass placed in front of the oculars in such a way that only the rays from the lower halves of the instrument pass at right angles to the plate surface (zero position). They are turned in order to pass in a known way through both corneal surfaces. The displacement is shown mathematically to be proportional to the apparent thickness of the cornea. The direction of the displaced ray is parallel to its original direction. The displacement by a correct value can be made only when the axis of the apparatus (the bisectrix of the angle between the right and left ray) coincides with the above perpendicular to corneal surfaces. The accuracy of thickness measurements is  $\pm 0.031$  mm.; therefore, the deviation between the 2 determinations is 0.033 mm.

The real thickness of the cornea is directly proportional to the displacement of the emerging beams and inversely proportional to the sinus of the half-angle between them. The displacement value is directly proportional to plate thickness and is a function of the corneal refractive index. The angle between the rays is a function of the radius of curvature of the anterior corneal surface. It follows that the real thickness of the cornea is a function of its refractive index and curvature of its anterior surface, the direction of ray, and the plate thickness.

Measurements are done at this intersection point of the anterior surface with the above perpendicular. Healthy corneas range 0.46 to 0.67 mm, in thickness, averaging 0.565 mm.  $\pm$  0.0077. In myopia of more than  $\div$  4D, the thickness is lower. The condition of the epithelium and endothelium affects the value (swelling or shrinking). Hence, irrigation with drugs effects an error. 17 references, 2 tables, 8 figures.

A New Esthesiometer for the Cornea (Un nouvel esthésiomètre pour la cornée). J. Th.-P. Faber, Strasbourg, France. Rev. méd. de Nancy 73: 308, Aug.-Sept. 1948.

A new esthesiometer has been devised for measurement of the tactile sensibility of the cornea. It has 11 filiform-tests, ranging from 1 mg. to 200 mg. on a single support, controlled by a disk that makes it possible to change

the test instantly. The pressure on the tests is equal to their weight and cannot vary. The apparatus is small (diameter 2 cm., length 4 1/2 cm.) so that it can reach all sectors of the cornea.

A Method of Skiascopy with the Electric Ophthalmoscope. B. Resengren. Acta ophth. 26: 215-21, Fasc. 2, 1948.

In ordinary ophthalmoscopy the punctum remotum is transferred to an infinite distance; in skiascopy, it is transferred to the plane of the examiner's pupil. In this procedure, the illuminated spot on the retina is seen as an enlarged disk. As the instrument is moved from the bright to the dark zones of the retina, the observer sees the disk as immovable (one and the same position), but its brightness varies, depending on the direction of movement. In detecting this neutral point, the lenses placed before the patient's eye must match the parallax sign. To evaluate true refraction, 2D. must be added to the value of the lens, since the latter shifts the apparent position of the neutral point 0.5 ahead of the patient's pupil.

Instead of determining the parallax sign, the neutral point image may be identified as erect or inverted. The former (bright superior edge of the spot) indicates hyperopis; the latter (bright inferior edge), myopia. Lenses must be changed until the entire spot is of uniform brightness. The method is most reliable for patients over 50. In younger patients an error of 1 to 2D. occurs, due to unstable accommodation. Accuracy is highest for hyperopic eyes because of the relaxed accommodation muscles in the dark (the pupil need not be dilated in this procedure). Total astigmatism can be determined

by the same test. 2 figures.

On the Diagnosis of Intraocular Tumors and Foreign Bodies by Means of Anterior Pupillary Transillumination. M. Vannas. Acta ophth. 26: 125-34, Fascia 2, 1948.

In postero-anterior transillumination of the pupil the chief source of errors is an apparent impairment of the red pupillar reflection. The uncertainty is due to the influence of the observation angle. The greatest intensity of the reflected ray is obtained when the source of light and the observer's eye are on a straight line passing through the pupil. Hence, to eliminate errors, the observer's eye must stay within the cone of light with the above line as the axis, and a base equal in area to that of the pupil. A shift of the observer's eye or the patient's head brings out the shadow of the iris, which may be mistaken for a posteriorly located tumor. Sanguineal transillumination is used in locating intra-ocular foreign bodies. 8 references. 1 figure.

Examination of the Media of the Eye with a Plane Mirror Combined with a Loupe. Loupenspiegel in Severe Myopia: an Improvement in the Method. K. G. Ploman. Acta ophth. 26: 213, Fascia 2, 1948.

Examination of a myopic eye by transillumination, using a plane mirror and a loupe, usually gives poor results. The reasons are: (1) Strong convergence of the emergent light, hence strong dispersion of the beam in the front

of the retina, which results in reduced density of the light falling on the observer's eye; (2) Since this light is reflected from a larger than normal area of the retina, opacities present in the lens, cornea and other media of the eye are seen as shadows by the examiner. To eliminate errors, a negative lens is placed before the patient's eye, which serves as a corrective device since it reduces the dispersed beam to a parallel one, thus securing increased brightness of the retinal field. Finer opacities become visible if present in the lens or the vitreous humor. In examining ametropic eyes, a positive lens is used instead.

Apparatus and Method for Clinical Recording of the Electroretinogram. Gösta Karpe, Stockholm, Sweden. Docum. ophth. Gravenh. 2: 269-76, 1948.

A new apparatus has been developed by the author in collaboration with Dr. R. Elmquist of Stockholm. It is intended to simplify the technic of electro-retinography and to render the method more generally applicable in eye clinics everywhere. This apparatus has now been tested and is available at the Härnhs Elektriske AB in Stockholm. An active electrode of chlorinated silver in the form of a rod is screwed, water-tight, into a bottleneck on a specially constructed plastic contact lens. This lens is filled with salt solution and applied directly over the pupil. The indifferent electrode is a chlorinated silver plage which is fixed to the inside of a plastic head band. A spring speculum keeps the eyelids separated and is grounded to the metal shielding of the apparatus, thus helping to shield the procured tracings from outside active interference.

With rigidly standardized stimulative light source the ERG can be taken in an ordinary dark room. The new light stimulus is very short and, in addition to making it easier for the patient to keep the eye motionless during the test, it cuts off the tracing so that only the a-wave and b-wave are recorded. On this apparatus no normal eye produced an a-wave. Thus, when the a-wave is present, it can be considered as pathological. 16 references. 7 figures.

Early Diagnosis of Siderosis Retinae by the Use of Electroretinography. Gösta Karpe, Stockholm, Sweden. Docum. ophth., Gravenh. 2: 277-96, 1948.

The electrorectinographic recordings and clinical observations of 6 cases of siderosis show that there are 3 stages in the development of this condition. The earliest stage is detectable electroretinographically before this is possible by any other means; the results consist of an increase in both the positive and negative components of the tracing. These early results are thus of inestimable value in determining, in cases of doubt, the necessity for surgical intervention. In a second stage the ERG becomes negative and in the final stage disappears. In the latter 2 stages the ERG becomes irreversible. Nevertheless, despite the persistence of an abnormal ERG, the eyesight seems to remain surprisingly good so that a negative or an extinguished ERG is no centraindication to the removal of a traumatic cataract.

The author believes that, despite apparent good vision, an extinguished ERG indicates the presence of an atrophying process in the retina which might be demonstrated by more delicate methods of visual examination, such as an abnormal fatigability or a lowering of the flicker-frequency fusion rate. 28 references. 8 figures.

Vertical Ophthalmoscopy under Oblique Illumination (Ophthalmoskopie in aufrechtem Bild in indirekter Beleuchtung). A. Gut. Ophthalmologica, Basel 116: 79-86, Aug. 1948.

This test, as a supplement to standard methods (direct light and direct beam free from the red component), was used in examining fundus pathology, both before and after treatment. The symptoms included pigment accumulation in the fovea and macula, formation of a star or some other abnormal pattern, and excessively bright spots. These anomalies could be seen clearly only under indirect light. After drug administration, partial or complete elimination of pigment was again established by the oblique light test. Hence, simultaneous use of all three tests must be advised. 14 references. 1 figure.

Photography of the Eye. Alston Callahan, Medical College of Alabama, Birmingham, Ala. Med. Radiog., Rochester 24: 46-53, No. 2, 1948.

Photography of the external surface of the eye, lids, and face requires cameras used ordinarily for medical photography. To record eye operations, 16 mm. motion picture cameras and films are standard equipment. Special cameras giving an enlarged film image are needed for low power microscopic magnification, such as for the vascular supply of the limbus and iris network. The interior of the eye is photographed with a fundus camera. Critical focusing and proper lighting must be used. Exposure time is short, with a fairly large diaphragm opening. Reflections from the corneal surface must not obscure the pathology. Attention must be given toward a suitable background. Color photography is better than black and white film in many ocular conditions. Abnormal tissue is often differentiated in surgical motion pictures only by its color.

For still pictures, eye structures are best seen with a camera having a ground-glass focusing device. A 4 x 5 in, view camera is useful to visualize the eyelids and adnexa, while a miniature camera using a single lens reflex principle with a 4 in, telephoto lens, is good to visualize lesions of the globe and portions of the lid. Kodachrome films have an extensive utility.

All photographs should be made in a special room for maximum convenience. The head should always be immobilized, and the eye must be perfectly still during photography. To hold the lids apart, an assistant's fingers are preferable to specula. The lids are retracted with cotton-tipped applicators. The maximum exposure time is usually 1/10 second, and floodlighting can be used, without reflectors, and with a dimmer. With small apertures, instantaneous exposures must be made with photoflash lamps.

In motion pictures the Cine-Kodak Special Camera permits groundglass focusing of the full field through the photographic lens; it accepts interchangeable film magazines to accommodate 100 and 200 feet of film. A 63 mm. lens at 3 ft. is preferable for close-ups of the eye or lids, and a 25 mm. lens at 3 to 4 ft. for the full face. To avoid distortion a correctly centered view with the horizontal component of the frame parallel with the palpebral fissure is essential.

Most fundus cameras were made by Zeiss. The rays from the source traverse the periphery of the pupil and retinal rays return through the center of the pupil and form the image on the film. Good films are obtained with Kodak Super Ortho-Press Film (4.5 x 6 cm.). 10 references. 1 table. 8 figures.

The Measure of Fusion Frequency in Clinical Practice (*La mesure de la fréquence de fusion en clinique*). R. Weekers and F. Roussel, Liège, Belgium. Docum. ophth., Gravenh., 2: 130-92, 1948.

The "falling method", or continuous slowing of the presented images, is preferred to the "sampling method". Physiologic variations are insignificant; pathologic changes are marked. Refractive faults do not influence the action of fusion significantly; on the other hand, any reduction in the transparency of the ocular media (corneal maculae, cataract, vitreal opacities) lowers the frequency of fusion in proportion to the degree of opacity.

In retinal detachment the area of minimal detachment can be determined by this method and after surgery it is the best method for following the progress of retinal reattachment. In nicotine poisoning the size of the scotoma can be accurately determined. In glaucoma the early symptoms can be recognized before findings on perimetry appear. In lesions of the central visual tracts the method nicely supplements, and is in some respects (depth of scotomal defect), superior to perimetry. In arteriosclerosis, however, the method of fusion frequency is inferior to the ophthalmoscope in detecting early symptoms. 34 references. 5 tables, 25 figures.

# 6. Ocular Movements and Motor Anomalies, Nystagmus, Reading Disability

Surgical Treatment of Vertical Squint. P. Riise. Acta ophth. 26: 153-65, Fasc. 2, 1948.

Resection of the vertical muscles is greatly effective in homolateral paralysis of the trochlear nerve with consequent overactivity of the inferior oblique muscle. Residual defects are easily corrected by prismatic lenses. The Peters technic (used in 29 successful operations) involves resection of the external rectus and advancement of the internal rectus, severance of the trochlear pulley and suturing of the tendons of the superior oblique muscle. The latter approach was used where the internal rectus had to be inserted, followed by recession of the inferior or advancement of the superior rectus. In operating on the inferior oblique muscle, the eye was tested previously with respect to its rotational movements. In the hyperforic eye the inferior oblique was weakened; in the normal eye, the inferior rectus was relaxed. 30 figures. 30 photographs.

Surgical Treatment of Imbalance of the Extraocular Muscles. Physiologic Aspects. *Avery deH. Prangen.* S. Clin. N. America. 28: 861-70, Aug. 1948.

Correct diagnosis and clear understanding of the physiology and pathology of ocular motility and its variations are necessary for successful operation. Decision to operate is based upon response to nonoperative treatment, the condition of visual apparatus, and the nature and amount of strabismus. It is preferred to operate upon one eve and then operate upon the other at a later date. The decision for unilateral or bilateral operation is dependent upon the severity and extent of the defect. Correction of the outstanding defect first is preferred in cases having combined or mixed involvement. Action of the other muscles or other eve may then be observed and operation done later if necessary. Muscles should be covered with Tenon's capsule at operation to minimize postoperative adhesions to the sclera. The operation must be sufficiently radical to attain objectives with minimal trauma to tissue. Exact measurements are necessary in altering tendon insertions on the sclera. The oblique muscles can be altered easily if they are completely freed and visible. The inferior oblique is best operated upon posteriorly at its insertion in the globe. Plain gut sutures are preferred for securing scleral anchorage. Excessive postoperative reactions are well controlled by intramuscular injection of boiled, whole milk. 14 references.

Strabismus Convergens Concomitans (Strabismus convergens concomitans). M. C. Colenbrander, Delft, Holland. Nederl. tydschr. v. geneesk. 92: 1588-94. May 29, 1948.

Children over 4 years old are often brought to the ophthalmologist when the family doctor has advised that nothing need be done about the squint because the child is still too young to wear glasses. This is wrong. If the case is neglected the non-fixing eye will become amblyopic. The author begins very early with eye-exercises. At first daily eye drops of 1/10 to 1/2% atropine are instilled. If the bad eye cannot be brought to fix by this method, the good eye is bandaged, especially during meals when the youngster can be closely watched. If this is unsuccessful, the good eye may be covered by a dressing fastened with mastix for a couple of days at a time. When the child is older, exercises are started with an ordinary stereoscope. Glasses are seldom applied before the third year. Operation may not be resorted to at all if the convergence can otherwise be brought to a reasonable degree of correction.

Orthoptic Training Used in Correction of Latent Hyperopia and Exophoria, A Case Report. Frank W. Acker, Santa Monica, Calif. Am. J. Optometr. 26: 260-63, June 1949.

The case is presented of a 50 year old woman who complained that although she had worn her prescription only three months, she was having extreme discomfort. Comparison of the past prescriptions and present analytical findings indicated that latent hyperopia became manifest, with an

excessive amount of exophoria resulting in discomfort. Fusion, stereopsis, eye and hand co-ordination and rotations were of poor quality. Orthoptic training was given with the objective of forcing plus acceptance and improving the visual skills. The patient was given 20 sessions consisting of monocular and binocular rotations, fusion training, cheiroscopic drawing, and eye and hand co-ordination with pointers. This was followed by specific training to force plus acceptance. The second analytical examination showed improvement in the ductions and phorias, especially at near point. Fusion, stereopsis, and rotations were improved as well. Since the symptoms of discomfort had disappeared, it was assumed that the new prescription could be given. The patient returned in six weeks and reported complete satisfaction.—Robert E. Bannon.

Anatomical Factors in the Etiology of Heterotropia. Richard G. Scobee. Washington Univ. M. Alumni Quart. 11: 93-94, July 1948.

Surgical treatment of crossed eyes has been developed only during the last century. The general approach in the correction of crossed eyes lies in the assumption that the patient has a defect of the fusion faculty which is heritable and which causes the eye to cross in the first place. This concept of defect of the fusion faculty is untenable; organic anomalies which are inherited are probably the important factors in etiology. These anomalies may be of 4 kinds; (1) anomalies of the check ligaments; (2) anomalies of the insertions; (3) anomalies of the intramuscular membrane; and (4) anomalous muscle slips.

Inhibitional Palsies. J. J. Pascal. Optometr. World. 36; 28-30, May 1948.

Cases of paralytic vertical imbalance sometime present difficulties in differentiating between a paresis of an inferior muscle in the hypertropic eye and its contralateral antagonist in the other eye. A right hypertropia due to paresis of the right inferior rectus may stimulate a right hypertropia due to paresis of the left inferior oblique. In both cases the hypertropia is most marked in the right side of the field. Further, a lag of the paretic muscle in its field of action will be matched by a lag of the contralateral non-paretic antagonist in its field of action when the paretic eye fixes. This lag is explained by the lessened innervation sent to the contralateral antagonist because of a lessened innervation sent to its yoke muscle, the antagonist of the paretic muscle. The mechanism of the diagnostic sign served to differentiate between the two muscles; namely, that of applied head tilt, is explained. —Robert E. Bannon.

## 7. Anomalies of Refraction and Accommodation, Contact Lenses

The Effect of Rhinoplasty on the Refractive Error. Matthew S. Ersner, Maurice H. Alexander and Bernard C. Gettes, Temple University, Philadelphia, Pa. Eve, Ear, Nose & Throat Monthly, 27: 457-60, Oct. 1948.

The rhinoplastic surgeon is and should be asked, "What effect does a rhinoplasty have on the refractive error or on the patient's eyes?". In cases of refractive error of 4.00 D. or more, the patient should be forewarned of

the changes in refractive correction caused by surgery. The after-effects of rhinoplastic operation on the eyes may be traumatic, cosmetic, or physiologic. Traumatic effects are: (1) simple conjunctivitis, (2) infra-orbital ecchymosis, (3) subconjunctival hematoma and (4) postoperative edema. These are all caused by conditions incidental to surgery. There is actually no cosmetic effect other than the apparent widening of the intercanthal space. This is an optical illusion due to the change in the projection of the nasal bones. There may be some interference with muscle flexibility on change of expression should the muscles of expression be interfered with as a result of improper elevation of the periosteum.

The effects on the visual physiology of the eyes are: the vision per se is unaffected as there has been no interference with the intrinsic function of the eye; the visual field is definitely affected, particularly where a large convexity (hump) has been removed. It has further been observed that there has been an increase in the field of binocular vision in as much as 5 degrees as a result of the removal of this hump. This is particularly valuable in occupations or avocations where a wide field of binocular vision is important for accuracy and precision. The converse is true where a concave saddle is restored to a straight profile, the binocular field being reduced proportionately. Where the patient wears corrective lenses, we have found a consistent functional change of great importance. Following rhinoplasty, the refractive error of virtually all patients wearing glasses underwent a specific change enough to cause a change in the lenses. Because the effective power of a corrective lens varies with the distance of the lens from the apex of the anterior surface of the cornea, the refractionist should measure and record this distance. Only at this distance will the eye obtain the refractive power of the lens. If the prescription optician finds the lens cannot be placed at the specified distance, then he must determine what strength lens will produce the same physiologic effect as the 6.50 #D, sphere at 14 mm.

These optical principles must be borne in mind: (1) the effective power of a convex lens is increased the further it is from the eye; (2) the effectivity of a concave or minus lens is decreased the further it is from the eye. To demonstrate the point further specific cases are shown with illustrations. Thus by correcting a large convexity, we can reduce lens to cornea distance and diminish the correction necessary in minus lenses as in myopics, and increase needed strength (or thickness) of convex lenses in hypermetropics.

### CONCLUSIONS

- 1. Rhinoplasty does not cause any anatomic ocular changes.
- 2. Reduction of a large humped nose increases the nasal field of vision.
- 3. Elevation of a saddle nose reduces the field.
- The effectivity of the patient's corrective lenses is altered in that the distance of the lenses from the cornea is changed by surgical correction of the malformation.
- Severe myopics should never have a saddle nose corrected without the prospect of having to wear greater refractive lenses.

- Severe hypermetropics should never have a hump nose corrected for the same reason.
- 7. The importance of measuring the distance of strong lenses between the back surface of the lens and the cornea is emphasized to ophthalmologists, especially where an external deformity of the nose is to be changed. 4 case references. 5 figures.—Author's abstract.

Aniseikonia — a Simplified Method of Measurement and a Case Report. Ferd T. Elvin, School of Optometry, University of California, Berkeley, Calif. Am. J. Optometr. 26: 78, Feb. 1949.

A method is described for the clinical measurement of over-all anisei-konia. A rectangle of black paper is suspended from the ceiling of the refracting room by fine threads. Its size and position are such that homolateral halves of a projecto-chart image are seen with each eye while both eyes have an obstructed view of other objects in the room. Over-all size lenses are used in conjunction with the patient's prescription in a trial frame to attain subjective size equality of the monocularly viewed images of the chart. By this methor, 4.9% of aniseikonia was disclosed in a patient whose state of refraction was: O.D. +0.25 D. S., O.S. -3.50 D. S. This amount of aniseikonia is compared to an expected 6.4% if the myopia of the left eye were wholly indicial in nature. One-half of the disclosed aniseikonia was corrected by ordering the right lens ground on a +3 D base with a 1.5 mm. center thickness and the left lens ground on a +10 D base with a 4.0 mm. center thickness. The wearing of these lenses gave the patient clear, comfortable, binocular vision. 7 references. 2 figures.—Author's abstract.

A Modification of Javal's Rule for the Correction of Astigmatism. J. Donald Kratz and William G. Walton, Jr., Pennsylvania State College of Optometry. Am. J. Optometr. 26: 295-306, July 1949.

This article analyzes Javal's Rule in the light of present day refractive knowledge. Javal's Rule is quoted as: As .t=K+pAs.c with the "K" term quoted by E. Javal as 0.50D. and A. Javal as 0.75D. The "p" term was given the value of 1.25D.

In this investigation Neumueller's tables were used to calculate the 1.25 "pAs.c" term, thus allowing for the effectivity change in moving the correcting lens from the cornea to the position as worn in front of the eye. A total of 295 eyes was analyzed with some cases returning periodically over a period of 10 to 20 years, thus indicating satisfaction with the prescribed cylindrical correction given. The value of the "K" term, or what is presently called physiological astigmatism, was calculated as the difference between the "pAs.c" term (effectivity allowance) and the subjective cylinder prescribed. The results showed a definite grouping of cases where the "K" term was a 0.50D. against the rule. This agrees with the findings of G. J. Bull.

Further analysis is made relative to the change in the cylindrical power as age increases, and it was shown that no appreciable change in the physiologic astigmatism occurs with age. However, the statistics showed a trend toward more against-the-rule corneal astigmatism as people get older. A discussion of the possible causes of physiologic astigmatism is included, and a summary of most of the rules suggested for use with the Keratometer. 20 references. 1 table. 8 figures (graphs).—Robert E. Bannon.

The Turville Infinity Binocular Balance Test. Meredith W. Morgan, Jr., Univ. of California. Am. J. Optometr. 26: 231-239, June 1949.

A technic of subjective refraction under binocular conditions has long been sought. Such a method would approximate more nearly the circumstances under which the eyes are in daily use and would allow a better method of checking the balance of the spherical ametropia, the axis and amount of astigmatism, as well as the stability of the binocular mechanism. In this article several methods (such as those proposed by Sugar, Sherve, Copeland, Luckeish and Moss) are reviewed briefly. A description and evaluation of the Turville method is, however, the chief concern of this paper.

The essential idea of the Turville method is that a flat septum of several centimeters width may be used to separate the foveal area of the 2 eyes provided the test letters are in double vertical columns. A mirror used in conjunction with the septum offers the easiest method of application. The purpose is to provide simultaneous comparison of uniocular images under binocular conditions with fixation at 6 M. The clinical reliability of the Turville Infinity Binocular Balance Test was tested on 215 consecutive patients. The results indicate that in about 10% of the subjects there will be a significant difference in the refractive error determined by the Turville method as compared to the usual monocular methods. A significant difference was assumed to be a change of a 0.50D. in the sphere, a 0.25D, in the cylinder, 10 in the axis, and or the addition of prism power. The author concludes that the Turville test is a valuable addition to other refraction methods. 8 references. 5 figures,—Robert E. Bannon.

The Contact Lens and Binocular Vision (Cristales de contacto y visión binocular). Tomas Barraquer Cerero. Arch. Scc. oftal. hispano. am. 8: 981-84, Oct. 1948.

A middle aged myopic woman had worn ordinary glasses for years without apparent inconvenience. When contact lenses were fitted, however, she soon complained of dizziness and nausea, and a convergent strabismus developed. The original correcting glasses were —9D, for both eyes, but it was now found that only the left eye was —9. The right eye showed a vertical meridian of —12D, and a horizontal of —11. The patient had been fixing with the left eye and disregarding the right. A total correction for both eyes was prescribed, and after 5 sessions of diploscopic exercises, a simple binocular vision was procured. The patient noted with relief the difference between her present vision and her former vision. This case teaches two lessons: the first concerns the necessity for a painstaking examination of both eyes before fitting glasses; and the second—more general—shows the fallacy in eye work of reasoning from abstractions without practical trial and error experimentation.

Results with Contact Lenses. Darcy Williams, Sydney, Australia. M. J. Australia 2: 419-20, Oct. 9, 1948.

Questionnaires were sent to 118 unselected patients fitted with contact lenses in the year 1946. Patients with keratoconus totaled 47, and those with delayed mustard gas keratitis, 24. Results in bilateral keratoconus were 71% successful and in mustard gas keratitis, 45%.

The conclusion is that individuals with abnormal sensitivity of the eyes, asthma, hay fever, and allergic conditions of the conjunctiva were unsuitable for contact lenses. The difficulties are emphasized in providing a satisfactory lens in instances of monocular aphakia when the other eye was normal. There is also the problem of corneal edema which is not fully solved. O references.

The Corneal Lens—Progress Report. Robert Graham, Pasadena, Calif. Am. J. Optometr. 26: 75-77, Feb. 1949.

The corneal lens, a diminutive form of contact lens, is presented. It has no scleral portion and is made to ride directly on the cornea. Corneal misting does not occur with it. The lens requires no accessory fluid, does not alter the natural appearance of the eyes and permits an average wearing time substantially greater than that of scleral contact lenses. A summary of 407 cases fitted with these lens is included. O references.—Author's abstract.

Contact Lenses and Their Effect on Neuro-muscular Patterns of Vision. Leon E. Firestone and Ernest M. Gaynes, Detroit, Mich. Am. J. Optometr. 26: 95-100, March 1949.

Fifty subjects wearing contact lenses (the product of five different laboratories) were investigated to determine the effects of contact lenses on their binocular vision as compared to spectacles. Standard refracting equipment and procedures were used. The results, using arbitrary allowable variations listed, reveal significant differences between tests taken with the patient's spectacles, and with his contact lenses.

The greatest significant differences occur in convergence measurements, presumably as a result of prismatic effects of noncentered contact lenses. The various factors causing such prismatic effects are reviewed. In order to eliminate prismatic difficulties it is suggested that contact lenses be fitted first as nonoptical shells. After the shells have been fitted comfortably, the point on the blank lenses which represents the center of the pupillary axis should be marked and the optics generated about that point. The apex distance should be held to a minimum. This is a basic consideration affecting both optics and fit. 2 figures.—K. B. Stoddard.

Form and Thickness Considerations of Ophthalmic Lenses for Various Near Points. F. W. Sinn, Pennsylvania State College of Optometry, Philadelphia, Pa. Am. J. Optometr. 26: 202-8, May 1949.

Ophthalmic spectacle lenses of the same dioptric vertex power are usually considered interchangeable, except for considerations of image size, even though they may have many different forms and thicknesses. In the usual clinical practice the dioptric power of a lens is considered equal to its vertex dioptric power, regardless of its form or thickness. This paper discusses the limitations of this assumption in lenses of appreciable thicknesses. The effective powers of lenses of different forms and thicknesses are calculated for the near points of 1/3 and 1/5 M. It is shown that for lenses having thicknesses such as those of industrial safety lenses and dioptric powers above  $\pm$  4.00 D, the effective powers for these near points will vary appreciably with the form of the lens. The flatter the form of the lens the less the variation in effective powers for these near points. The effective powers of bifocal lenses are also calculated. It is shown that for these lenses the effective power varies the least when the segment is on the front surface of the lens. 2 tables. 1 figure. 4 graphs.—Robert E. Bannon.

An Objective High Speed Photographic Technique for Simultaneously Recording Changes in Accommodation and Convergence. M. J. Allen, Ohio State University, Columbus, Ohio. Am. J. Optometr. 26: 279-89, July 1949.

A method is described for recording simultaneously by photography the changes in accommodation and convergence when the subject changes accommodation from a far to a near object, or from a near to a far object which is on the line of sight of and visible to the right eye only. A movie camera operating at 64 frames per second was used to photograph the changes in size of the third Purkinje-Sanson image accompanying changes in curvature of the front surface of the lens. Convergence was recorded by photographing the image of a point source of light, formed by reflection at the anterior surface of the cornea of each eye, on a continuously moving film. A detailed description of the apparatus, together with excellent diagrams, is included in the paper.

To illustrate the nature of the data obtained with this technic, one figure is presented which shows the accommodative and convergence responses when the subject quickly adjusts from a far to a near object located along the line of sight of his right eye, and when his left eye is effectively occluded. For this situation the convergence reaction time is shorter than the accommodative reaction time and the velocity of the convergence change is greater than that of the accommodative change. 4 references. 9 figures.—Robert E. Bannon.

## 8. Conjunctiva

Conjunctivitis Follicularis and Molluscum Contagiosum. G. Saubermann. Ophthalmologica 116: 121-23, Aug. 1948.

Symptomatology of this disease is often confusing, simulating trachoma. In the reported case the patient complained of prickling and a burning sensation in both eyes. Vision was good; refraction and fundus were normal. The conjunctiva tarsis and the transitional folds were reddened. In the latter, as well as on the plica semilunaris and the conjunctiva bulbi, opaque follicles were found resembling those of trachoma. The case history suggested some

predisposition. The epithelium was tested (smear) and considered positive. Zinc sulfate was prescribed in view of moderate discharge. Further tests, however, showed no inclusion bodies, hence the diagnosis appeared doubtful. Soon afterward a skin rash appeared on the face (nodules) which particularly affected the lids. This is characteristic of the molluse infection (microscopic confirmation of the parasite was not stated).

Keratoconjunctivitis Sicca and Chronic Polyarthritis. Henrik Sjögren, Jönköping, Sweden. Acta med. Scandinav. 130: 484-88, June 10, 1948.

Every elderly arthritic woman who has conjunctival symptoms should be suspected of having keratoconjunctivitis sicca (KCS). About 10% of all cases of primary chronic arthritis suffer from KCS. Both arthritis and KCS are twice as common among females. Early diagnosis is difficult. KCS occurs with or without arthritis. The average case shows xerostomy or symptoms from the mucous membranes of mouth and pharynx. Teeth suffer early damage in xerostomy. It may be that both arthritis and the rest of the KCS syndrome are expressions of a chronic general infection. The great incidence in females points to an endocrine component. In some cases the patients look older than their real age.

In the gland disease aspect of the KCS syndrome, there appears to be parenchyma disintegration; the glandular changes resemble those found in earliest stages of experimental A-avitaminosis. This disintegration is seen only in the first stage of the disease before lymphocyte infiltration has begun and before the corresponding mucous membrane produces symptoms. These are the primary marks of the gland disease and may be characterized as an adenopathy. The disintegration has been interpreted as a senile phenomenon. It is likely that the final cause of the KCS syndrome involves two components, one infectious and one endocrine. 7 references.

Aphthous Oral and Genital Ulcers with Conjunctivitis (Behcet's Triple Symptom Complex). Lawrence M. Nelson and H. I. Burtness, Santa Barbara, Calif. California Med. 69: 453-55, Dec. 1948.

The case presented is that of a 17 year old white male who has recurrent painful ulcers of the oral cavity and the genitalia as well as recurrent conjunctivitis. This patient is thought to have the triple symptom complex described by Behcet. The condition began in 1945 as "canker sores" and progressed in spite of local therapy. Systemic therapy in the form of streptomycin, penicillin, blood transfusion, the sulfonamides, folic acid, protein hydrolysate and vitamin supplements, was ineffective. Hyperplexia seemed to result in some temporary improvement but this form of therapy also became ineffective. Benadryl, crude liver extract, testosterone, and repeated intracutaneous injections of smallpox vaccine were also tried. Extensive laboratory investigation revealed no abnormality other than a low 17-ketosteroids (5.2 mg. per 24 hours). Therapy in the form of testosterone did not result in any improvement.—Author's abstract.

Contagion of Trachoma in Wrestlers (Contagion du Trachome chez des Lutteurs "Catch as Catch Can"). Albert Favory, Paris, France. Rev. Internat. du Trachome 25: 197-98, No. 35, 1948.

Having been called upon to examine and treat a number of professional wrestlers, the author makes some pertinent remarks on the contagion of trachoma. It seems almost certain that trachoma has been transmitted from the first patient (a former American sailor) to the second patient (an American-Polish wrestler) and then to a third one (an American-Italian). The two latter patients denied any previous infection, which was easy to believe, since they lived in a country where trachoma is carefully checked; however, the infection could have been awakened by wrestling traumas. The virulence of the infection appeared to diminish considerably as it was passed on to a new conjunctiva. The mechanism of transmission is readily understood, considering the closeness of the wrestlers during their bouts.

Considerations of the Etiology of Trachoma (Considérations sur le probléme étiologique du trachome), G. B. Bietti, Pavia, Italy. Rev. de Oftal, Rumania 1: 21-34, July-Sept., 1948.

Epithelial inclusions and inframicrobian corpuscles cannot be considered as Rickettsias because, on the one hand, sulfonamides act upon them, and on the other hand, para-aminobenzoic acid has no reaction upon them, although it is a specific against Rickettsias. Epithelial inclusions are not phagocyted or degenerated bacteria, since penicillin and sulfonamides affect them. They should not be interpreted as by-products of degeneration or cellular reaction, since the regressive phenomena under antibiotic treatment could not be explained.

Clinical observations, experimental and microbiologic facts establish an agent of trachoma different from Rickettsias and bacterias. This agent is seemingly identifiable with the epithelial inclusions and the inframicrobian corpuscles, which probably represent the trachoma virus in a corpuscular form. The sensitivity of the agent of trachoma to sulfonamides and penicillin is an element which permits its distinction from the so-called "typical" viruses, placing it closer to the lymphogranuloma venereum, psittacosis

group. 61 references.

Trachoma in Afghanistan. F. L. Baum. South African M. J. 23: 214-15, March 19, 1949.

The incidence of trachoma in Afghanistan, where it is called Kokra, is 85% in patients with diseases of the eye. It is manifested in severe forms and a great percentage of all those afflicted become partially or totally blind. The fly seems to be the main carrier, but the incredibly unhygienic conditions among the people contribute greatly to its spread.

The principle of treatment has been to apply only such substances which are not destructive to the normal tissues. Three or four daily washings with perchloride of mercury and applications of fine sulphate form the most important part of the treatment. Silver nitrate and copper sulphate should be

avoided, as there is a danger that they may damage the epithelium of the cornea. Good results have also been obtained with cibazol, while penicillin has no therapeutic value. Cutting out the swollen fornices is deprecated, and Knapp's and Kuhnts methods are applied in preference. Fatty ointments should not be used. Application of drugs in powdered form is preferable. The pannus should be scraped first with a sharp spoon. The disease is curable only if the treatment is started at an initial stage. Prevention will only be possible if the inhabitants are taught the principles of hygiene and how to apply them to the healthy and to the sick eye — a task which will not be easy. —A. Jokl.

Pterygium: Some Details of Its Surgery. (Pterigión algunos detalles de su cirugia). E. Zbikowski Margarida, Seville, Spain. Arch. Soc. oftal. hispano-am. 8: 1017-23, Oct. 1948.

In his operation on pterygium the author uses a modification of the operation of MacReynolds, that is, he leaves the operative wound, left upon removal of the growth, uncovered by conjunctiva. This heals by cicatrization and allegedly prevents recurrence of the progression of the pterygium toward the cornea. After anesthesia with cocaine in the usual manner, the fleshy growth is picked up with a tenaculum and dissected painstakingly back with a broken off portion of a safety razor blade held in a needle holder. The raw area on the cornea and sclera is then carefully curetted with the eye curette or with the edge of the razor blade. The lower border of the pterygial flap is then cut back leaving the apex intact, and a U-suture fastens it down to the lower conjunctival border. The upper border of the flap is then cut away, the incision extending around to the sclero-corneal juncture, and both upper and lower edges are trimmed in order to leave an elliptical raw area partially enclosing the cornea.

Bitot Spot (photograph and report). D. R. Campbell, M. B. Proc. Roy. Soc. Med. 41: 722, Oct. 1948.

This patient had a sizable Bitot spot associated with an exceptionally low level of vitamin A in the blood. He had been taking large doses of vitamin A for three months but his vitamin A fell from 192 to 39, as 46 IU per 100 ml, when it was stopped. The conjunctiva was opaque and yellow, and the face lusterless. Administration of vitamin A improved the complexion and caused the conjunctiva to become pink, but the Bitot spot did not disappear. The foamy epithelium could be scraped off, leaving a crater. This was later excised without recurrence. O references.

# 9. Cornea, Sclera and Tenon's Capsule

Pericorneal and Corneal Vascular Phenomena in Keratitis (Les phénoménes vasculaires périkératiques et cornéens au cours des kératites). A. Busacca, Sao Paulo, Brazil. Rev. de Oftal, Rumania 1: 35-46, July-Sept., 1948.

During the course of keratitis, limbal conjunctiva becomes edematous and hyperemic. The veins of the "zone of the terminal nets" are dilated and sinuous; the arteries are more prominent than normally, but show slight morphologic changes. In the "zone of palisades" the veins are engorged, and the smaller recurrent vessels are more visible. The episcleral system is outlined and becomes bluish. A more or less severe edema is noted at the limbus. The conjunctiva becomes gelatinous and the vascular neoformations are intense. Inflammatory hyperemia and exudates at the limbus cause migratory cells (blood cells and histiocytes) to enter the cornea, directed toward the infectious focus. From the corneal tissue itself, the fixed cells react, but histiocytes are absent.

In the course of the inflammatory processes of the deeper layers of the cornea, vascularization occurs not only in the limbal region but also in a more or less extensive area of the pericorneal sclera. Interstitial vascularization has morphologically different appearances; the most frequent ones are the filiform loop formations. Superficial vascularization springs from existing vessels which elongate and form some new collateral branches. Typical of these are the vascularizations found in trachomatous pannus or fascicular keratitis. As soon as the inflammatory process slows down, involution of vascularization takes place. Some vessels narrow considerably; others thrombose by a process of endovasculitis, becoming white lines; in other vessels, the blood column becomes intermittent and the vascularization slows and stops entirely. The appearance, at the slit lamp, of the old vessels is totally different from that of the nerves. 8 illustrations.

Persistent Keratitis. P. Jameson Evans. Proc. Roy. Soc. Med. 41: 723, Oct. 1948.

A cured case of persistent keratitis which had existed for about two years is reported. The condition seemed strumous when first seen and had persisted with active corneal vascularity in the interstitial layer in spite of varied treatment, including tuberculin. A 2 mc. radon seed was stitched underneath the conjunctiva close to the limbus and overlying the major vessels encroaching on the cornea. It was removed after 48 hours. The vision, which had been 6/60 or less, began to improve in 12 months and was 6/12 in 18 months. The corneal opacity was almost entirely absorbed. 0 references.

Acne Rosacea Keratitis. *P. Jameson Evans*. Proc. Roy. Soc. Med. 41: 723, Oct. 1948.

A case is reported which had resisted many different treatments; and the patient was having increasing attacks of vascularity. A radon seed was applied on the nasal side under the conjunctiva of each eye and left in for 48 hours. There was comparatively little reaction to the radon and the vessels quickly sclerosed. There was no recurrence in 9 months, 0 references.

Histologic Study of a Clear Corneal Graft: The Comportment of the Nerves (Examen histologique d'une greffe cornéenne transparente: Le comportement des nerfs). A Franceschetti and J. Babel, Geneva, Switzerland. Ann. d'Ocul. 180: 142-45, Mar. 1947.

The histologic examination of a clear graft of six years' duration, in a syphilitic patient who died of tuberculosis, has been of great interest. The

sagittal section of the cornea showed a normal corneal morphology. The frontal section, stained with silver, revealed that neither the vessels nor the nerves had penetrated the graft. Only a subepithelial meshwork appeared, continuous with that of the host. The star-shaped cells of the stroma sent pseudopodic extensions through the scar. There were therefore, at least partially, some cellular elements which extended from the host into the graft; but the innervation was secondary to the vascularization. It could not be predicted whether the subepithelial nerves, absent in the opaque grafts, would play a trophic role.—M. Fontaine.

Corneal Implantations (À Propos des graffes de cornée). Beauvieux and J. Teulieres, The Ophthalmalogic Clinic, University of Bordeaux, France. J. de med. de Bordeaux 125: 460-61, Oct. 1948.

Two methods were compared in experiments on rabbits: (1) whole donor cornea removed using the trephan (disc flap); (2) a portion of donor cornea removed by means of an ordinary knife (rectangular flap). The former procedure proved superior. Implantation was performed as follows: (1) donor cornea was preserved until used in physiologic-serum fluid; (2) recipient cornea was incised and the opaque portion removed; (3) the opening was closed at once, using a donor flap removed from the preservative. The slightest opacity disqualified it for implantation; (4) the flap was fastened to the remaining portion of cornea by two sutures along the vertical and the horizontal diameter; (5) when adjusted, care was taken to insure that the posterior flap would not touch the lens, to offset a tendency to protrude as soon as corneal opacity has been removed.

Flaps from whole cornea give better, all-round results. Infection and hypertension may set in, but the former is rare, since antibiotics are now applied as routine measures. Hypertension is a dangerous complication which may appear days or even weeks after implantation and causes poor tolerance of the flap, due to malnutrition of the eye tissues. The smaller the flap, the greater the chance for success. Nevertheless, a high percentage of good closures was achieved when the whole cornea was implanted.

Effects of Ultraviolet Irradiation on the Corneal Epithelium: II. Exposure to Monochromatic Radiation. *Jonas S. Friedenwald, Wilhelm Buschke, Jane Crowell and Alexander Hollaender*. J. Cell & Comp. Physiol. 32: 161-73, Oct. 1948.

The effect of exposure of the eyes of rats to monochromatic ultraviolet radiation of various wave lengths was studied to determine the distribution throughout the spectrum of sensitivity for the various effects noted. The animals were killed at varying times after exposure, and the eyes removed for histologic study. The stimulation of mitosis in the corneal epithelium, previously observed on exposure to low doses of ultraviolet radiation, was found to be produced not by the direct effect of the radiation itself, but to some factor in the gaseous environment of the ultraviolet generator, possibly ozone.

Three direct effects of radiation are mitosis inhibition, nuclear fragmentation, and loosening of the epithelium. These are produced throughout the effective spectral zone studied. There is the question of whether the three effects all show spectral sensitivity curves of the same general shape, indicating the same or similar absorbing substances responsible for all three effects. Nuclear fragmentation occurs in the superficial layers of the corneal epithelium, mitotic activity in the basal cell layers, and loosening of the corneal epithelium at the boundary between the epithelium and the underlying connective tissue. Spectral sensitivity curves were constructed on the assumption that effective photochemical reaction occurs at or near the place where the effect is observed.

The nature of the absorbing substances could not be accurately specified. All three curves reached a high level at 280 mu suggesting that the absorbing substances may be protein or nucleoprotein. There were no significant differences between the curves for mitosis inhibition and for loosening of the epithelium. The crossing over of these curves with the curve for nuclear fragmentation at the longer wave lengths may indicate that the absorbing substance for the latter may be a different protein. 5 references. 1 table. 5 figures.

Congenital Fibroma of the Cornea. S. R. Anderson, Copenhagen, Denmark. Acta ophth. 26: 331-35, No. 3, 1948.

A tumor was confirmed clinically and histologically in a 6 months old boy. The family history was negative. The connective tissue was poor in cellular elements, and those found were spindle-shaped, squeezed in between the collagen fibers, and showed practically no signs of malignancy such as mitoses or inflammation. The epithelial layer was normal but the Bowman membrane was lacking. The condition must have developed during the embryonal life as a result of hyperplasia of the substantia propria, indicating that a tendency to proliferation existed in the mesodermal layer of the tube. Further study of the cases on record may establish the hereditary nature of this tumor. 14 references. 2 figures.

Studies on Keratoconjunctivitis Sicca Based on Examination of 500 Subjects Affected with Rheumatism and an Equally Large Control Material. S. Holm, S. Sjörgen, et al. Acta ophth. 26: 269-73, No. 2, 1948.

In this group of arthritic patients 14% had KCS. Women predominated (2:1) and showed parallel progress of both conditions. However, in another group 40% of KCS cases had no arthritis. Correlation appeared doubtful also for ozena, xerostomy (50%) and the Plummer-Vinson syndrome. High incidence among women points to endocrine disturbance, probably due to senility, sepsis, or A-avitaminosis. Lymphocytosis, avitaminosis B<sub>2</sub> and iron deficiency are irrelevant. Vitamin B and iron counteract sideropenic dysphagia in Plummer-Vinson syndrome, but the ocular symptoms do not improve.

Diagnostic tests alone are not reliable. The Bengal rose test indicates Keratitis neuroparalytica, rather than KCS. Schirmer I is not sufficiently specific. Sensitivity of cornea to chemical irritants must be considered. If irritation of the nasal mucosa stimulates a flow of tears, Schirmer II is helpful in establishing this condition. Blinking of the lid is another sign. If not sufficiently frequent, the tears cannot spread evenly over the corneal surface, hence dryness results, especially in the center. It is is concluded that KCS and polyarthritis as yet cannot be regarded as a definite syndrome.

Anomalies of Red and Green Vision and Corneal Anesthesia Associated in the Same Family (Protanomalie, deuteranomalie et insensibilité cornéene associées dans une même familee). Arnold Verray and Michel Jéquier, Lausanne, France. Lyon méd. 180: 699-700, Oct. 17, 1948.

A study was made of color vision anomalies and corneal anesthesia in one family. All the persons affected were descendants of a couple married in 1792. For testing color vision isochromatic charts (Ischihara, Stilling, Bostron) were used, and most of the persons showing abnormal color vision and some of those showing normal vision were also examined with Negel's anomaloscope. All tests for corneal anesthesia were made in 1913 and 1920 by older methods and not with the biomicroscope. Anesthesia of the superior branch of the trigeminal nerve and of the cornea was associated in some cases with infantile neuropathic keratitis. This anomaly of corneal anesthesia was inherited as a simple recessive, as shown by the family chart. The anomaly of red vision varied in degree but never became true protanopia; it was inherited as a sex-linked recessive. The anomaly of green vision also varied, and in certain cases there was true deuteranopia (green blindness) which also was inherited as a sex-linked recessive.

A Transverse Krukenberg's Spindle. (Über einen Fall von querliegenden Krukenbergschen Spindel). F. Blodi, University of Vienna, Austria. Acta ophth. 26: 373, 1948.

Bilateral horizontal pigment spindle was observed in a woman, 76 years old and hypermetropic. The condition was due to senile degeneration of the Descemet membrane. A glassy line was visible on the margin of the cornea (pathologic changes) fading into the innermost layers not visible under the slit-lamp. The endothelium of the cornea was normal, but the cell colloids were altered. The floating pigment particles were displaced inward, lodging on the inner corneal surface. 22 references.

### 10. Anterior Chamber and Pupil

Pupil Size in Ametropia. Monroe J. Hirsch and Frank W. Weymouth, Stanford University, Palo Alto, Calif. J. Applied Physiol. 1: 646-48, March 1949.

A common assumption is that the pupil size in myopic eyes is larger, and that in hyperopic eyes it is smaller, than in emmetropic eyes. The purpose of this study is to determine (1) if there is any relationship between pupil size and refractive state and (2) if the relationship is present only when the apparent pupil size is considered, as implied by Tscherning.

Measurements of apparent pupil size and refractive state were on 266 students (532 eyes) and a coefficient of correlation of —0.243 was found between the refractive state and the pupil diameter. This indicates association between hyperopic and small pupil or myopic and large pupil. The apparent pupil size is larger than the real pupil size and the difference depends upon the corneal power and the depth of the anterior chamber. Since myopia is associated with a greater corneal power and a larger chamber depth, the apparent size of the pupil can be expected to be greater than the real pupil size as pointed out by Tscherning. By statistical treatment of the data, using Senstrom's figures for the average corneal powers and anterior chamber depths for the various refractive states, the average real pupil sizes were computed. The coefficient of correlation (—0.104) between real pupil size and refractive state was considerably lower than that for apparent pupil size and refractive state.

The authors conclude that there seems to be a real basis for the common opinion that pupil size varies with types of ametropia,—the myopic eyes generally having the larger apparent pupil size. However, the great variability in pupil size for any given refractive state does not permit much prediction in individual cases. Tscherning's view that difference in apparent pupil size between myopes and hyperopes due to the greater magnification in the former case is supported by the present findings, which indicate that while 6% of the variability in apparent pupil size is associated with refractive state, only about 2% of the variability in real pupil size is so associated.—R. E. Bannon.

The Comportment of the Pupil, Under the Action of Certain Drugs, Following the Resection of the Cervical Sympathetic. (Il comportamento della pupilla dopo resezione del simpatico cervicale sotto l'azione de alcuni medicamenti). G. Morone and F. Andreani, University of Pavia, Pavia, Italy. Riv. oto-neuro-oftal, 23: 250-58, July-Aug. 1948.

Foerster's second neurone (anterior horn of C8-D2 to the superior cervical sympathetic ganglion) was interrupted on 5 rabbits by cutting the sympathetic trunk midway between the two cervical sympathetic ganglia. In 6 rabbits the third neurone (superior cervical sympathetic ganglion to the dilatator pupillae muscle) was interrupted by excision of the superior cervical sympathetic ganglion itself. Foerster's first neurone (hypo-thalamus to the anterior horns of C' to D2) was not included in this study. The results obtained by instillations into the eye of atropine, cocaine and adrenalin, and by the pain stimulation (pinching of skin of neck), conformed fairly satisfactorily with those published by Foerster, except for those concerning the action of adrenalin in those cases where the second neurone was interrupted. Here adrenalin still produced mydriasis.

This behavior of adrenalin in these cases is explained by postulating that a part of the fibers making up the pathway of the second neurone take their departure from a point beneath the superior cervical sympathetic ganglion and that this ganglion is thus merely a part of the second neuronic pathway; or that there was present in these rabbits an accessory cervical sympathetic trunk which escaped interruption. A third possibility would be an autonomic activity of the intramural sympathetic plexus within the iris muscle.

### 11. Uveal Tract and Sympathetic Ophthalmitis

Medullo-Epitheliomas: Diktyoma and Malignant Epithelioma of the Ciliary Body. (A General Review and a New Case of Diktyoma). S. R. Andersen, The Rigshospital, Copenhagen, Denmark. Acta ophth.. 26: 313-30, No. 3, 1948.

Congenital, slowly-progressing diktyoma in the anterior part of the ciliary body, was observed in a girl, age 16. Some degree of malignancy was shown microscopically aften enucleation (transition between true diktyoma and malignant epithelioma).

Such tumors belong in the general group of medullo-epitheliomas. Hyperplasia develops early during the embryonic life (at 6 weeks). The growth is located in the inner layer of the retinal ciliary epithelium. At that stage it is nonpigmented and still undifferentiated, yet of complex (multilayer) structure. Essentially the tumor is benign (immature); the added malignancy results from maturation during further embryonal life. True malignant epitheliomas originate from the same part, in the medullary layer of the neural tube, but at a later stage, when the inner ciliary epithelium thins out to a single layer of cells. Malignant epithelioid melanomas, as well as some transitional forms of low malignancy, are often mistaken for medullo-epitheliomas. 55 references. 5 figures.

Diagnosis of Choroidal Sarcoma: on the Reliability of the Tumor Prognosis. H. Skydsgaard. Acta Ophth. 26: 135-52, No. 3, 1948.

In a group of 30 patients examined by means of transillumination, melanosarcoma of the eye was overlooked (though later established microscopically and the condition diagnosed erroneously as glaucoma, retinal or choroid detachment due to hemorrhages, corneal or lens opacities, or luminous pupil (no shadow). These diagnoses resulted in delayed enucleation and danger to life (advanced growth with metastases). Hence, negative data of preequatorial transillumination must be checked through additional tests such as attenuated (graduated) light intensity, exposure of sclera after Dalén (reported by Dr. Larsson) or replacement of a binocular loupe by a positive 3D. lens in the ophthalmoscope (in eye opacities).

In another group (21) a tumor was 'detected' and enucleation performed, but the diagnosis was not confirmed histologically. Hemorrhages and senile degeneration of the macula or retina were especially misleading, while glaucoma, benign melanoma and other disorders gave fewer errors. Eye Symptoms in Toxoplasmosis: Observation on Four Cases in Childhood. K. O. Granstrom and J. H. Magnusson. Acta ophth. 26: 223-27, No. 3, 1948.

The pathogenic organism (infection carrier) of this disease is an intracellular parasite, Toxoplasma. Onset in childhood points to congenital development. The symptoms include hydrocephalus or microcephalus, convulsions, mental deficiency, intracranial calcification and choriorentinitis. The four severe cases reported, confirmed by positive serologic tests, were aggravated by chronic uveitis and cataract.

Intravital Dyeing of the Iris (In vivo vegzett iris-festes). C. Hahn, University Eye Clinic, Debrecen, Hungary, Szemeszet 86: 31-33, March 1949.

Histamine, .5 mg., was injected into the anterior chamber of albinotic rabbits. After a few minutes 10 cc. of India ink was injected intravenously (dilution 1:10). Histologic examination showed a great mass of extracellular granules in the basal portion of iris, with fine distribution in the capillary endothelium. The retina was completely free, as was the other eye serving as a control. The therapeutic possibility in albinotic patients is considered. 2 figures.—S. deGrosz.

#### 12. Crystalline Lens

Cataract Extraction by the Suction Method. A Review of Seventy-Five Cases. Charles I. Thomas, M.D., Cleveland, Ohio. Arch. Ophth. 39: 805-15, June 1949.

Cataract extraction by the suction method has not been used as extensively as it should, largely because of unjustified fear of its effects. Indications for use of this method are: (1) the lens is hypermature; (2) the capsule is tense; (3) the capsule has exfoliated; (4) the lens must be dislocated before it can be delivered, (5) the capsule is friable. Contraindications are: (1) the vitreous is fluid; (2) the lens is dislocated from trauma or congenitally. To avoid slipping off the lens of the suction cap, two precautions are helpful. Keep the suction cap parallel with the body of the lens, and avoid haste in withdrawing the lens. Tumbling is the method of choice for delivery, although a sliding technic may be used, especially if the lens is easily dislocated. In tumbling, be sure to rotate the suction cap in an are parallel to the vertical plane of the lens, by lowering the hand and wrist as the cap is rotated. The author studied 618 cases of intracapsular extractions on which suction had been used in 75. Rupture of the capsule occurred in 87 of those lenses removed with forceps and in none of those done with suction. 26 references. 2 tables. 2 figures.

The Use of Sutures in Cataract Surgery. Geminiano de Ocampo, College of Medicine, University of the Philippines. Acta. med. Philip. 5: 35-42, July-Sept. 1948.

Use of sutures in cataract surgery enables quicker and stronger wound coaptation plus early and greater freedom of movement to the patient. With sutures, cataracts may be removed from patients who would otherwise be

considered a poor operative risk. The ideal suture must be corneo-scleral and appositional and produce almost perfect wound coaptation without overriding, uneven margins or lateral displacement, and completely preincisional. The use of sutures makes the operator less timid, enables him to be more meticulous and to avoid disaster if prolapse of the vitreous occurs, and it diminishes operative and postoperative complications. While suturing lengthens and somewhat complicates the operation, it gives a higher percentage of useful and good visual results. Experience obtained in use of sutures in 100 consecutive cases of cataract surgery is reviewed, the various methods being tried in the first 35 cases. The author considers the McLean suture used at the Wilmer Institute to be ideal and the Verhoeff's tract suture next best. Either interrupted or running continuous sutures are used in closing the conjunctival flap. Lid traction sutures anchored to a Katzin mask are used in all cases instead of an eye speculum. The rectus bridle suture is found essential in placing McLean's suture, 7 references, 2 tables, 12 figures.

Cataracts Due to Deficiencies of Phenylalanine and of Histidine in the Rat. A Comparison with Other Types of Cataracts, W. Knowlton Hall, Lester L. Bowles, V. P. Sydenstricker and Henry L. Schmidt, Jr., University of Georgia, Augusta, Ga. J. Nutrition 36: 277-96, Aug. 10, 1948.

Lenticular changes were observed in rats deficient in phenylalanine, histidine, tryptophane, or riboflavin. The changes included: general haziness, separation of the superficial fibers, widening of the sutures, diffuse and granular opacities in the cortex, the presence of a refractile line separating cortex and nucleus, and dense nuclear opacity of variable degree. Lenticular changes of some degree were found in deficiency of protein and of each of the essential amino acids except arginine. The changes involved haziness, visible separation of superficial fibers, and widening of the sutures in varying degree. By returning to the control diet rats deficient in phenylalanine or histidine, there occurred a reversal of superficial changes; the dense nuclear opacities could not be reversed.

Of 1200 rats examined, spontaneous cataracts were observed in 13. The cataracts were in the form of dense, cottonlike, nuclear opacities in otherwise apparently normal lenses. They were not associated with the superficial changes seen in the nutritional deficiencies. Of 73 rats fed a 20% casein diet with 10% additional L-tyrosine, 1 rat developed large, dense, nuclear cataracts after six months. 24 references. 1 table. 27 figures.

Intracapsular Lens Extraction and Retinal Separation (Extraction totale du cristallin et décollement de la rétine). S. Schiff-Wertheimer, Paris, and J. Sédan, Marseille, France. Ann. d'ocul. 180: 513-20, Sept. 1947.

This study over a period of several years has shown that retinal separation, following an intracapsular extraction of the lens, appears to be more frequent in cases of early aphakia, high myopia, and in the very aged. It does not appear that the incidence of retinal separation in aphakia has changed since the generalized practice of intracapsular technic. The advantages derived from this method for the surgical treatment of retinal separation (absence of capsular remnants, satisfactory mydriasis) should make it a technic of choice, even though the retinal separation is relatively more frequent. Retinal separation occurring months or years after aphakia is not necessarily to be considered as a complication of the lens extraction.—M. Fontaine.

The Frequency of Senile Exfoliation of the Anterior Surface of the Lens in Inflammatory Glaucoma. *H. Eivind.* Acta Ophth. 26: 231-35, No. 3, 1948.

Among 150 glaucoma simplex patients, mostly in the 60 to 80 age group, 85% had senile exfoliation of the lens capsule, as shown by microscopic examination. The remaining cases (inflammatory glaucoma) gave 50% recoveries, all free from signs of exfoliation. Thus, senility, rather than glaucoma, appeared as the true etiologic factor.

Dr. Rosengren identified glaucoma simplex with the senile form, as distinct from the inflammatory cases (which he divided into the acute and the

prodromal group), having a different etiology.

Retrolental Fibroplasia. F. B. Walsh, United States of America. M. J. Australia. 2: 424, Oct. 9, 1948.

Two premature infants had smaller eyes than usual. One had pale masses in the fundus near the periphery, which had increased in size. The second had a clear lens, posterior synechiae and vessels running across the eyes, and a mass behind the lens completely blocking the pupil. The first infant, and possibly the second, in the present state of knowledge should fall into the group diagnosed as having retrolental fibroplasia. Eyes of that type were always smaller until glaucoma supervened. The condition should be differentiated from retinal blastoma in which the eyes were not smaller.

Since a normal full-term infant is in complete darkness until birth, exposure of the eyes to light in premature infants may so irritate the retina as to be a causal factor. This is purely hypothetical. There is a question as to whether the complicated treatment given to very small premature infants to keep them alive may cause the disease. Congenital retinal detachment may be related to the condition. Although operation has been advised, the results have been unsuccessful. In the author's cases, operation had been performed and the membrane pulled out; it was composed of fibrous tissue and retinal elements.

#### 13. Vitreous Humor

Experimental Study on the Transplantation and Substitution of the Vitreous. *Alberto Urrets Savalia (Hijo)*, *Cordoba*, *Argentine*. Ophth. ibero-am. 10: 1-37, No. 1, 1948.

Rabbits were used in this study. The fluids employed for the substitution were: fresh rabbit vitreous, obtained from the animal previously studied, hydrochloric acid solution with a pH of 6 and a molar concentration of 0.000,001 and sodium chloride solutions of 0.85 and 0.9%. The usual withdrawal quantity of vitreous and the subsequent substitution was approximately half of the total capacity of the eye. Simultaneous withdrawal and substitution did not seem to be essential. Preliminary cauterization of the areas of incision in the sclera seems indicated. Subsequent careful, impermeable suture of the scleral incision wound did not seem to be essential in the eye of the rabbit, but is nevertheless recommended for the human eye. The 0.85% salt solution was found to be the best for purposes of substitution. The author has devised a solution of sodium chloride (with small amounts of phosphates added for the buffer effect), having a pH of 7.5 and a molar concentration of 0.1593, 48 references.

#### 14. Retina

The Detection of Abnormal Retinal Correspondence. L. S. S. Kirschberg. Tr. Canad. Ophth. Society 103-111, 1948.

Abnormal retinal correspondence is a common observation in cases of squint. The term denotes a binocular sensorial relationship and is not applicable to one eye only. Tests for the anomaly fall into three groups. The first comprises those based on the dissociation of the two eyes, such as using a red glass over one eye, colored spectacles and lights, or vertical prisms. This type of test can be done by obtaining the objective angle by the cover test, and the subjective angle by the Maddox rod test. The second group comprises those tests using the major amblyoscopes. The after-image or direct test is an example of the third group, but is difficult and time consuming. Small angles of anomaly, or "retinal slip", are not uncommon. This occurs after muscle surgery when the eyes have been brought nearly straight. It may cause symptoms and may easily be missed; spectacles are of no help. 7 references.

Recurrent Intraocular Haemorrhages in Young Adults; Eales' Disease. A. J. Elliot, Tr. Canad. Ophth. Soc., 39-47, 1948. University of Toronto Press, 1949.

Twenty-two cases of recurrent intra-ocular hemorrhages in young adult males are reported. The average age of patients was 28 years. The hemorrhages occurred while the patients were not engaged in physical exertion. The skin tuberculin test was positive in all cases. Nine of the 22 cases showed x-ray evidence of pulmonary tuberculosis, 2 of these were admitted to a sanatorium, while a third died of tuberculous pleural and pericardial effusions.

The retinal vessels of the case which came to autopsy showed an endophlebitis. No tubercle bacilli, caseation or giant cells were seen. The average duration of this disease was three years. The eyes were affected about equally, both eyes in 7 cases. When the retina was not obscured by massive vitreous hemorrhage, bleeding could be observed from the peripheral retinal veins. Retinitis proliferans was observed in all but one case. In cases of frequent hemorrhages the vision deteriorated, the eyes turned outward, and posterior subcapsular cataract developed. Treatment, including confinement to bed, streptomycin, radiation therapy, rutin, vitamin C, vitamin K, and injections of tuberculin, was not helpful. 8 references.

Eales' Disease. P. Jameson Evans. Proc. Roy. Soc. Med. 41: 724, Oct. 1948.

This patient was treated with deep roentgen therapy to the posterior half of the globe three months previously. Vision in the right eye had been poor for 12 months and was 6/60 when first seen. A total dose of 4,000 r was given at the skin, equivalent to 2,000 r at the retina, in divided doses of 500 r twice a week. The opacity of the vitreous cleared up in about two months but the hemorrhage recurred and vision retrograded to 6/24. It was hoped that there would be no further recurrence of the hemorrhage. O references.

Intraocular Pressure in Cases of Hemorrhage of the Retina. *Juan Manuel Vila Ortiz*, M.D., Rosario, Argentina. Arch. ophth. 39: 661-64, May 1948.

Interest in the relation of intra-ocular pressure to hemorrhages of the retina was aroused by Igersheimer's article in 1944. Since then, 314 patients have been studied with this relationship in mind. A previous paper reported the results on 99 patients with diabetes. The other 215 are included in this report. Of these, 51 had hypertension without retinal signs of vascular sclerosis; 129 had hypertension with retinal sclerosis; 33 had hypertension with renal involvement; 1 had arteriosclerosis but no hypertension, and 1 had renal phlebitis with hemorrhage of tuberculous origin. Of the 215 patients, 148 had no retinal hemorrhages. Tabulation of tonometric readings in those with and without retinal hemorrhages reveals that the frequency of low readings is remarkably higher in eyes with retinal hemorrhages than in those without. The same observation is apparent from examination of the tables on diabetics with and without retinal hemorrhages. The conclusion is that a low intra-ocular pressure may predispose to production of hemorrhages. Therefore, tonometric readings may be of value in prognosis in patients with diseases in which retinal hemorrhage is a frequent complication. Low tension is to be expected in eyes with arteriosclerosis, while higher tensions are found in eyes with phlebosclerosis. 5 references. 5 tables.

The Eye and the Diencephalon. VII. The Glycemic Curve under Glucose Tolerance Conditions and the Photo-Glycemic Reflex in Subjects Affected with Retinitis Pigmentosa. (Occhio e diencefalo. VII — Curve glicemica da carico di glucosio e riflesso "foto-glicemico" in sogetti affetti da degenerazione pigmentaria retinica). A. Rubino and I. Esente, University of Florence, Italy. Riv. oto-neuro-oftal. 23: 244-49, July-Aug. 1948.

Eight cases of retinitis pigmentosa are reported. In these patients the tolerance curve for glucose was distinctly abnormal in 7. The abnormality was essentially a too low curve of the glycemic rise after administration of

75 Gm. of glucose on a fasting stomach, and an abnormal prolonging of the rise and fall phases. In one case only, a mild one, was the curve normal. This behavior of the curve suggests an interference with the glyco-regulatory centers in the diencephalon. On the other hand, in 7 of the patients the photo-glycemic reflex was normal. This consisted of a drop in the blood titer for glucose upon stimulation of the retina with light. In one case the reflex was abnormal, that is, the curve showed a rise instead of a fall, as in the more advanced cases of glaucoma; however, this patient represented a severe stage of retinitis pigmentosa. The authors conclude from these figures that there is more than one factor in the diencephalon involved in its relationships with the visual apparatus. 4 references. 3 figures.

Rubella Retinitis in Tasmania. J. Bruce Hamilton, Frank Phillips, C. R. Palfreyman and D. H. Waterworth, Hobart, Australia. M. J. Australia 2: 418-19, Oct. 9, 1948.

Of 46 deaf children at the Tasmanian Institute for the Blind, Deaf and Dumb, deafness in 29 was a result of rubella in the mother during pregnancy. Of the 29, 13 had retinitis varying in degree from fine pigmentary stippling to gross pigmentary and colloid changes with waxy disks. The 13 children presented other congenital ocular defects such as nystagmus, anisocoria and cataract. The other 16 children, deaf because of maternal rubella and without retinitis, showed no congenital ocular abnormalities. The remaining 17 deaf children, whose deafness was not caused by maternal rubella, also had no congenital ocular abnormalities. Attention is drawn to the theory that the 1938 epidemic of rubella might have been caused by mutation of the virus. There is the possibility that the mutated virus could mutate again and lose its affinity for embryonic tissue.

Unilateral Retinitis Pigmentosa: 2 Cases. K. K. Dreisler, The Nielson and Winther Clinic, Aarhus, Denmark. Acta Ophth. 26: 385, No. 3, 1948.

Two women, aged 53 and 63, in good general health, were seen. The younger patient was deaf in one ear (degeneration of the acoustic nerve). The symptoms included degeneration of the sensory epithelium, especially the rods, followed by gradual expulsion of pigment. The latter was replaced by glia cells entering from the outside. In both cases only one eye was affected. Some authors deny the possibility of unilateral affliction and presume a latent retinitis in the healthy eye. However, hereditary asymmetrical conditions exist, hence abiotrophic changes on one side may represent a genotypical process. 9 references. 1 table.

Hypertensive Retinal Changes and Sympathectomy. R. W. Stephenson. Proc. Roy. Soc. Med. 41: 727-28, Oct. 1948.

This patient had high blood pressure and severe headaches five years and three years ago which improved under conservative treatment. The vision became misty a week before this admission and grew worse rapidly, affecting the nasal side of the field. Vision, right eye, was 6/12 part., and

left eye 6/5. The right fundus showed a swollen disk with hemorrhages and exudates, especially in the lower temporal quadrant. There were marked arteriosclerotic changes, the veins being tortuous and engorged and arteries narrowed. The left fundus showed similar but less marked changes. The right field was contracted to within a few degrees of the fixation point on the nasal side and full on the lower temporal side. The blood pressure was constant at 220/150. A bilateral two-stage transthoracolumbar sympathectomy was done and followed by symptomatic improvement, freedom from headache, and blood pressure of 180/140. The blood pressure was 180/125 in six months. Nine months postoperatively, vision right eye was 6/6 and left eye 6/5, each with +0.5 D. sph. Neither fundus showed any hemorrhages or exudates but there was marked narrowing and sheathing of the arteries. Veins were of normal caliber. O references.

The Effects of Experimental Retinal Anaemia in Rats. W. Turnbull. Tr. Canad. Ophth. Society 116-134, 1948.

Retinal anoxia was produced in rats by sectioning the central retinal artery, centrifuging the animals, and asphyxiating them in an atmosphere of nitrogen. The eyes were enucleated and fixed for sectioning at various intervals after these procedures. After sectioning of the central retinal artery the retina showed an immediate intense pallor. The retinal arteries were constricted. This gradually subsided so that after seven days the vessels were normal and the pallor had gone. The histologic changes were confined to the cerebral layer of the retina. This layer was edematous. The ganglion cells were swollen, and gradually degenerating. Similar changes occurred, but more slowly, in the bipolar cells. The retinal arteries were refilled with blood after 12 hours. After centrifuging, the retinal vessels were dilated, the retina was gravish-white. The sections showed edema of the nerve fibre layer, edema and degeneration of the ganglion and bipolar cells. After asphyxiation the retinal vessels appeared normal, and the retina was white. The sections showed edema of the nerve fibre layer, edema and degeneration of the ganglion cells, and a similar change, but less marked, among the bipolar cells.

The changes can be considered as early, or reversible, and late or irreversible. The irreversible changes commence in the ganglion cells almost immediately, but in the bipolar cells there is a delay of four to five hours.

These observations are considered to indicate the changes which occur in man after embolism, thrombosis, endarteritis, and spasm of the central retinal artery. 17 references. 9 figures. 3 graphs.

Discussion of the Effect of Sympathectomy on Hypertensive Retinal Changes. Geoffrey Bourne et al. Proc. Roy. Soc. Med. 41: 728-34, Oct. 1948.

Degenerative changes in the smaller vessels may occur separately from those caused by hypertension and may sometimes be exaggerated in terms of the patient's age. The arterial system may show early extensive degeneration as a result of nephritis, showing that hypertension is not necessarily the cause of retinitis. Sympathectomy may greatly improve the retinopathy in such cases without permanently curing the hypertension. A series of 3 unselected cases are described, all with failing vision and such gross retinal changes that it seemed that their vision would completely fail unless their hypertension could be reduced. Sympathectomy was done in all 3 cases and all now have normal vision a year after operation.

Renal changes usually occur before retinal changes in these cases but the ophthalmic surgeon can give valuable aid in determining the state of the visible peripheral arteries. Sympathectomy may be done much too early, but if done too late, permanent degenerative renal changes will have occurred. It is suggested that further research might develop a series of tests showing exactly what the retinal arteries are doing in the early stages. 1 table. 5 figures.

The Ocular Changes Associated with Pheochromocytomas. Robert W. Hollenhorst, Mayo Clinic, Rochester, Minn. Am. J. M. Sc. 216: 226-33 Aug. 1948.

In reviewing the literature, the author found reports of examinations of the ocular fundi in 66 cases of proved pheochromocytoma. The author added 4 previously unreported cases, to make the total 70. Those patients who had the "adrenal-sympathetic syndrome" had palpitation, severe headaches, extreme anxiety, severe sweating, nausea, vomiting, lacrimation, dilatation of the pupils, paroxysmal hypertension and, occasionally, glycosuria, hyperglycemia, exophthalmos, swelling of the thyroid gland and signs and symptoms of Raynaud's disease.

Twenty-four patients (34.3%) of the 70) had paroxysmal hypertension with a normal interim blood pressure; 37 (52.8%) had persistent hypertension with paroxysmal episodes; and 9 (12.9%) had persistent hypertension without paroxysms. Ten (41.6%) of the first group, 4 (10.5%) of the second group and 1 (11.1%) of the third group were reported to have normal ocular fundi. Thirty-one patients (44.3%) of the total) had either retinopathy or neuroretinopathy. These patients comprised 8.3% of the first group, 62.2% of the second group and 66.6% of the third group. Retinal arteriolosclerosis was said to have been present in only 25% of the first group, but it was present in 43.2 and 55.5% of the second and third groups, respectively. The ocular lesions were said to have shown marked abatement or complete healing in all cases after successful surgical removal of the pheochromocytoma. The blood pressure of 25 patients was recorded post-operatively, in 6 (24%) of whom elevation of pressure was retained. Five of the 6 had retinal arteriolosclerosis.

Retinopathy and neuroretinopathy usually do not develop in patients with pheochromocytoma until the blood pressure becomes persistently elevated between attacks. However, severe retinal changes can occur occasionally, even when the interim blood pressure is normal. Ten of the 70 patients were children less than 16 years old; all had retinopathy. Since many of these patients complain primarily of visual difficulties, it is advised that

the ophthalmologist be cognizant of the possible presence of this curable disease when he is confronted with hypertensive retinopathy, especially if the retinopathy is of the acute hypertensive type, without associated retinal arteriolosclerosis, and perhaps especially if seen in a child. 70 references. 1 table.—Author's abstract.

Changes in the Ocular Fundus Associated with Pheochromocytoma of the Adrenal Gland. Report of Three Cases. Gordon M. Bruce, M.D., New York, N. Y. Arch. Ophth. 39: 707-30, June 1948.

Pheochromocytomas are tumors growing from cells of the chromaffin system. Facts and theories of their characteristics are described, with extensive references to the literature. To make a study of the eye findings, 108 cases were reported. In only 38 of these eye signs or symptoms were mentioned. Twelve of these had normal eyegrounds. In the remaining 26 cases descriptions were not always adequate for comparisons, but in general, certain observations were typical. These included vascular changes without retinopathy in 35% of cases and with retinopathy in 58%. The retinopathy included hemorrhages, exudates, retinal and optic nerve atrophy, papilledema. Nine of the 15 cases with retinopathy showed papilledema, hemorrhage, and exudate. Narrowing of the arteries was found in all cases where fundus pathology was noted.

Differential diagnosis of the condition is very difficult. Three cases are reported in detail. In the first case, where eyegrounds were described as having hypertensive retinopathy grade III prior to surgical removal of the tumor, they were entirely normal a year and one half later. The second case showed narrowing of the arterioles with banding, tortuosity, and increased reflexes. Notching of the veins was present. An early macular star was seen. The patient died on the operating table. The third case showed macular stars, narrowed arterioles, hemorrhage, papilledema of 3-4 D., and in one eye a dense white plaque in the macula. Postoperative observations are not noted. 107 references. 1 table. 3 figures.

Familial Occurrence of Glioma of the Retina. M. Anker. Acta Ophth. 26: 241-45, No. 2, 1948.

Glioma (retinoblastoma) shows the highest incidence of all congenital tumors. The heredity is simple, occasionally collateral; malignancy increases by transfer to the next generation. The 2 similar cases reported involve a man and a woman, both 27. They had a clear family history; glioma, developed in infancy, was confirmed microscopically (bilateral and unilateral enucleation.) Both were married to healthy unrelated individuals. The man's daughter had bilateral glioma at the age of 5 months. One eye was enucleated; irradiation of the other eye was without effect. The woman's daughter developed unilateral glioma (enucleation). The other eye was treated by irradiation but formation of metastases led to death at the age of 2. Her son had bilateral glioma at 8 months. Irradiation failed to save one eye. The other eye remained, but its visual acuity could not be determined even three years later. Hereditary glioma in enzygotic twins was reported by Drs. Grauström and Holm.

The Mechanical Qualities of the Eye and its Tissues (Die mechanischen Eigenschaften des Auges und seiner Gewebe). J. Ten Doesschate and F. P. Fischer, Utrecht, Netherlands. Docum. ophth., Gravenh. 2: 193-267, 1948.

With the exception of the cornea and sclera, studies on the mechanical characteristics of the different tissues of the eveball have been few. The authors add some studies on the retina, running the tests against a rubber diaphragm (condom) for comparison. The isolated diaphragm of fresh retinal tissues exhibited a continuous distention pattern until rupture. The rupture occurred much sooner than that of the rubber diaphragm; only when the retinal tissue was fixed with formalin did the elastic resistance approach that of rubber and even then the distention pattern resembled that of fresh retinal tissue. The rubber diaphragm exhibited a discontinuous distention pattern, that is, the distention was slow at first, then became rapid, slowing up again just before rupture. The expanding bubble of rubber was an ellipsoid of rather uniform shape. The retinal expansion was irregular in shape. The rubber diaphragm ruptured as a whole thickness, as did the retina, when the pressure was applied from inside outward, while in the retinal tissue the rupture occurred first in the inside, or nerve fiber, layer when the pressure was applied from outside inward. In this latter case microscopic examination of the retina, fixed with pure nitric acid, showed that the rupture was always preceded by a sliding of one layer of the retina on the other, the slide occurring at the inner or outer nuclear layer. 67 references. 27 figures.

Late Results of Operations for Retinal Separation (Operated More Than Ten Years Previously) (Résultats éloignés des opérations de décollement de rétine) (Malades opérés depuis plus de dix ans). M. A. Dollfuss, Paris, France. Ann. d'ocul. 180: 547-52, Sept. 1947.

The study of 48 cases of retinal separation during more than 10 years has shown that operation derived from the technic of Gonin gave very satisfactory results. A cure obtained after three months has as much chance to be permanent as the non-operated eye has of showing a retinal separation. Diathermocoagulation and thermocauterization give approximately the same results. Not a single case of proliferating retinitis or "tractus vitréen" has been observed, even after perforating coagulation. The crystalline lens remained clear, although it may have at times become opaque in the non-operated eye.—M. Fontaine.

The Ganglion Cells of the Retina in Cases of Methanol Poisoning in Human Beings and Experimental Animals. O. Röe. Acta ophth. 26: 169-82, No. 2, 1948.

Tests on herbivorous animals (rabbits) poisoned with methanol showed no degeneration of the ganglion cells, hence no acidosis (autoprotection due to alkalinity of the vegetable diet). This protection is lacking in man. Autopsies revealed important changes in the retinal ganglia: the cell nuclei flattened by pressure against the cell membrane (shift from the normally peripheral location toward the marginal area); the nucleoli, likewise, were displaced outward; granules were seen in the nuclei (stained blue); extensive tygrolysis was seen in the protoplasm, decreasing from the center toward the marginal zone. Silver impregnation of ganglia showed no fibrils, i.e., the fibrillary structure of the protoplasm was destroyed.

Use of electroretinograms was reported by Dr. Karpe. During the acute stage the A wave reflects degeneration of the retinal ganglia (increased amplitude, decreased B potential). In convalescent patients the wave is normalized. 12 references. 2 tables. 6 figures.

The Electroretinogram in Detachment of the Retina. G. Karpe. Acta ophth. 26: 267, No. 2, 1948.

In this test the B potential drops with the increase of the detached area. In total detachment it is extinguished. In unilateral detachment the healthy eye gives a slightly reduced potential (predisposition). Experiments on rats (retinal structure similar to the human) showed a drop of the B potential in retinitis pigmentosa also.

Recent Advances in Colour Vision. H. Hartridge. Advance Sc., Lond. 5: 243-53, Oct. 1948.

Recent improvements in the older methods of study of color vision and the invention of new methods have led to the conclusion that the three-color theory cannot account for all or nearly all the aspects of human color perception. Among these newer methods the micro-electrode technic of Grant and the retinal direction effect of Stiles and Crawford are especially mentioned. A polychromatic theory, allowing for seven types of receptor, meets the modern requirements of a color vision theory, but it is not necessary to postulate such narrow spectral response curves for these receptors as those shown by Granit's modulators. Modifications of the three-color and fourcolor theories have been discussed in relation to recent experimental results, especially the possibility of polychromatism of the retinal receptors, but trichromatism of the nerve paths connecting the retinal receptors to the brain, or of the brain itself, has also been considered. It has been concluded that if all the known facts of color vision are to be satisfactorily explained, there must be polychromatism throughout the visual mechanism for color perception. 41 references. 3 tables.

Color Perceptions of Deuteranopic and Protanopic Observers. *Deane B. Judd.* J. Res. U. S. Nat. Bur. Stand. 41: 247-71, Oct. 1948.

Evidence of the relation of the color perceptions of the color blind to those of the normal observer are reviewed and a comprehensive intertranslation made between normal color perceptions of surface colors and protanopic and deuteranopic surface-color perceptions. Protanopic and deuteranopic observers are called red-green confusors because they confuse both red and green with gray, and even red with green. Review of the

literature on color perception by dichromatic, red-green confusing observers capable of comparing them to normal color perception shows that protanopic and deuteranopic visual mechanisms only yield color perceptions of yellow and blue. The chief theories of vision all provide for this type of color perception. A method of deriving protanopic and deuteranopic Munsell notations of colors from their specification in the standard ICI colorimetric coordinate system has been formulated on the basis of such color perception. These notations apparently conform to the usual perceptions which protanopic or deuteranopic observers have of them. They therefore make a complete and detailed comparison of the color perceptions of protanopes and deuteranopes with persons having normal vision. It is believed that this detailed information will aid in designing tests for color-blindness and will help colorblind persons to avoid embarrassment and dangers by enabling them to understand the relationship of their own visual system to the normal. 98 references. 9 tables.

The Stability of "Improvement" in Color Vision Due to Training—A Report of Three Cases. *Alphonse Chapanis, Johns Hopkins University*, *Baltimore*, *Md.* Am. J. Optometr. 26: 251-59, June 1949.

During the recent war years, many young men were disappointed when their defective color vision limited them to certain branches of the military services. They tried to circumvent this barrier by some form of training which purported to improve their color vision or, at least, to enable them to pass the color vision tests as administered at the recruiting stations. The author examined three men who were rejected for military service because of failure to pass the color vision tests. Two of these men received training on color vision tests from optometrists and the third obtained a copy of the test and trained himself with the help of a friend. All three were able subsequently to pass the color vision tests given at recruiting centers. However, the three men failed to pass the author's examination which included two tests which these men had never seen previously. Also, when examined on the tests which they had used in their training, the three men failed when they took tests honestly. Two of the men maintained that they could have achieved better scores if they had relied on their memories for specific cues; that is, they could have given the "correct" answers, even though they did not see the correct numbers as clearly as the incorrect ones. Although the training was useful in enabling these men to pass the tests at the recruiting stations by making use of clues which the color normal person never needs to use, there is no evidence that the training had any genuine effect on their color discrimination.—Robert E. Bannon.

Testing for Nyctalopia. W. S. Frederik, University of Leyden, Leyden, The Netherlands. Acta brevia neerl. 16: 36-37, No. 1-4, 1948.

Words are read through a slit in a dimly lighted box. The letters are printed in varying shades of gray on a dark background in such a way that each adaptation period of the eye being tested (readings are at one minute intervals) will cause the subject to see a different word. The time required for the eyes to adapt to reading each of the words seen is assigned values from 1 to 5 and a curve plotted for each individual tested. On the basis of this test it is found that the curves for the subjects with night blindness are much flatter than those in subjects with normal eyes. The presence of night blindness is diagnosed when the assigned value is less than 5 after 10 minutes.

### 15. Neuro-Ophthalmology, Optic Nerve, Visual Pathways, Centers and Visual Fields

"Choked Disc" in Neurosyphilis. Sven Ethelberg and V. A. Jensen, Community Hospital, Aarhus, Denmark. Acta psychiat. et neurol. 23: 49-55, No. 1-2, 1948.

In the 4 cases of meningitis syphilitica reported, the chief symptom was edema of the papilla. The Wassermann test was strongly positive in 3 cases and  $\pm$  in one. One patient was given antisyphilitic therapy alone, since ventriculography showed normal intracranial pressure. In 2 cases decompression by subtemporal craniotomy was done before administering the drugs. In one case a large gumma (granuloma) was removed from the middle portion of one hemisphere. The tumor was a deep-seated one, imbedded between the convolutions, and the meninges around the hemisphere expanded to a layer 3 mm. thick. Routine antisyphilitic drug treatment followed operation.

It appears that syphilitic gumma cannot be positively differentiated from an ordinary brain tumor unless ventriculography is done in addition to serologic tests. Also, an infectious growth will not be eradicated (dissolved) by resorting to drug therapy unaided; the tumor must be removed surgically. 2 references.

The Central Mechanism of the Nystagmic Movements (Sul meccanismo centrale della scossa nistagmica). M. Arslan, Padua, Italy. Riv. oto-neuro-oftal. 23: 298, July-Aug. 1948.

The movements in nystagmus arise as a complex excitation of the nuclear structures and associative pathways other than the vestibular nucleus and the vestibulo-oculomotor pathway (fasiculus longitudinalis posterior). The latent vestibular asymmetry defined by the author in 1934 can be included in the phenomenon known as "central excitatory state" (Sherrington). The author's experimental work since that time has demonstrated that the latent vestibular asymmetry can be elicited in the human by an extravestibular nystagmogenic excitation. The vestibular nystagmogenic excitation is propagated in an unidirectional sense, that is, departing from the vestibular nucleus and diffused to the hypothetical nystagmogenic nucleus and from thence to the oculomotor nuclei.

Use of Vasodilators in Syphilitic Atrophy of the Optic Nerves. Walter F. Duggan, Utica, N. Y. Arch. Ophth. 39: 645-56, May 1948.

The suggested causes and treatment for syphilitic optic atrophy are reviewed and discussed. Five cases are reported which were treated only with vasodilator drugs. Intravenous injections of sodium nitrite (100 mg.) were given at one or two day intervals. Oral erythrityl tetranitrate (1/4 gr.) was used in one case to supplement the injections. Some improvement in visual acuity and in peripheral fields was noted in all cases. These observations, while too few in number to be conclusive, corroborate Kennedy's hypothesis that in syphilis, angiospasm occurs in the arterioles of the central nervous system. The author suggests that this treatment, which appears to have helped these 5 patients, should be further investigated on a larger group of patients, particularly since other methods of treating syphilitic optic atrophy have proved unsuccessful. 15 references. 5 figures.

Tumors of the Optic Nerve. Long Survival in Three Cases of Intracranial Tumor. Marvin Posner (Capt., M.C., A.U.S.) and Gilbert Horrax, M.D., Boston, Mass. Arch. Ophth. 40: 56-76, July 1948.

A review of the literature on optic nerve tumors is given, and various statistical studies summarized. Three cases are reported, all with long survival histories. One patient with a one-year history of failing vision presented an advanced fibrillary astrocytoma, which was removed surgically and treated with deep roentgen therapy postoperatively. Twelve years later he is still alive and well, with no evidence of recurrence. The second case was one of fibromatosis of the optic nerve. History of visual symptoms dated back five years. The tumor was incompletely removed. Yet 10 years later the patient is still in good health with no recurrence. The third case had a three-year history of failing vision and headaches. A fibrillary astrocytoma was removed. The patient was doing well when last seen, four and a half years after surgery. While not conclusive, these 3 cases serve to emphasize that the prognosis of intracranial tumors of the optic nerve is not uniformly hopeless. It is felt that the ophthalmologist and neurosurgeon working together can do much to prolong life and preserve vision in these cases. 16 references. 1 table. 16 figures.

Pathogenesis of Cranial Nerve Lesions, Notably Ophthalmoplegias, Complicating Herpes Zoster Ophthalmicus. Erik Godtfresden, Copenhagen, Denmark. Acta psychiatr. et neurol. 23: 69-77, No. 1-2, 1948.

According to 8 cases described, as well as literature reports, Herpes zoster opthalmicus spreads by two different routes. Infection may hit the optic nerve, invading the optic chiasma, then spreading toward one of the cranial nerves (II, III, IV, VI) or toward Gasserian ganglion. Such cases are diagnosed as radiculomeningitis with lesions in the zone of the sinus cavernosus. In other cases infection is carried along the facial nerve, with lesions developing in the mesencephalon, pons or bulbus. These symptoms are diagnosed as brain stem encephalitis. Both types of complications are serious and require convalescent serum treatment, with confinement to bed. 12 references. 2 figures.

Case of Nasal Hemianopsia Demonstrated (Demonstration eines Falles von nasaler Hemianopsia). R. Brückner and R. Heuscher-Isler. Ophthalmologica, Basel 116: 115, No. 2, Aug. 1948.

The patient, age 61, was in good health, but showed gradual lowering of vision, most pronounced in the central field, and atrophy and excavation of the papillas (glaucoma). There was evidence of bilateral nasal hemianopsia. with the temporal field (periphery) narrowed in the left eye only. The a. carotis was hypercalcified, with the low and high tension (due to glaucoma) exactly balancing, hence 'normal' pressure. No hypersensitivity of cornea or paralysis of the oculomotor nerves was seen. The refractory system and fundus were normal, except for the defect in the papillas. The condition was caused presumably by strangulation of the optic nerve by the arteries in the circulous arteriosus as a result of hydrocephalus in the 3rd ventricle pushing the chiasma in the anterior direction. Tumors of the pituitary may have the same effect on these arteries, in the rare instances when they reach the chiasma. Hemianopsia is rare, occurs predominantly in men (5:2). The 20 to 40 age group is most susceptible. Cerebral tumor is the cause in 75%, sclerosis or syphilis affecting the cerebral arteries, especially where the lenticulothalamic region of the mesencephalon suffers from poor circulation (sclerosis of the a. mediae).

Hereditary Opticus Atrophy with Excavation of the Papilla. E. Wium. Acta Ophth. 26: 195-211, No. 2, 1948.

Sex-linked heredity (latent in females) is characteristic for this disease. The early stage shows edematous condition of the papilla, especially in the temporal area. Later on the field becomes narrowed, followed ultimately by central scotoma.

Members of 3 families, ages 26 to 61, all residents of the same community in the South of Norway, showed the above symptoms, including excavation of the papilla. The male/female ratio was 3:2. Intermarriages held no record of consanguinity. The 5 patients in one group had no circulatory disorders, venereal disease, glaucoma or high intra-ocular pressure. Two patients tested by encephalography showed no defective circulation in the internal carotid artery or any of its branches (no sclerosis).

It is concluded that geographic location may create predisposition to this ailment. Excavation of the papilla is due not to the opticus atrophy but to other, irrelevant causes, even though the two symptoms are congenital. Vision impairment is not necessarily caused by the atrophy (one patient had normal vision). 4 references.

The Eye and the Diencephalon. IV. Comportment of the Light Sensitivity in the Amblyopic Eye as Compared with the Normal Eye, and in the Matter of the "Day-Night Rhythm". (Occhio e diencefalo; IV — Comportamento della sensibilità luminosa in occhi ambliopici comparativamente agli occhi normalo e nel ssritmo giorno-notte".) A. Rubino and L. Pereyra University of Florence, Italy. Riv. oto-neuro-oftal. 23: 221-26, July-Aug. 1948.

Twenty cases of unilateral amblyopia are reported. In every case the other eye presented a natural, or corrected, visual acuity equal to unity,

whereas the weak eye did not present any dioptic or fundal changes and the natural, or corrected, vision was not less than 2/10. The adaptation curve in the dark and in the conditions of "day-night rhythm" was studied for both the congenitally amblyopic and normal eye of the same individual.

In this work it is found that the light sensitivity in the congenitally amblyopic eye is not diminished perceptibly and is indeed often better than that in the good eye. The same may be said with reference to the "day-

night rhythm."

Accepting, therefore, the evidence in the medical literature that the nervous control of the "day-night" rhythm lies in the thalamus, the authors conclude that the interference with vision lies farther back along the visual tract than the basal ganglia of the mid-brain, and perhaps involves the portion between the thalamic ganglia and the visual cortex of the occipital lobe. 21 references.

Bilateral Facial Paralysis and Abducens Palsy (Two Cases). A. A. Douglas. Proc. Roy. Soc. Med. 41: 723, Oct. 1948.

Two children, 11 and 6 years of age, showed an almost identical nuclear agenesis and striking similarity. The older was hypothalmic and the younger put on weight. Both had complete bilateral facial paralysis, congenital abduction deficiency, difficulty in swallowing during their first two years, and indications of twelfth nerve involvement. Examination showed no movements of dextroversion or levoversion and, except for movements of the head, refixation could only be accomplished by convergence. This was accompanied by pupillary contraction, whether near or distant objects were fixed. Bell's phenomenon was prominent in both cases. The condition was apparently caused by an affection of tracts in the region of the oculomotor nuclei. 0 references.

# 16. Eyeball, Exophthalmos and Enophthalmos

Our Present Knowledge of Exophthalmos and Its Surgical Treatment. Howard C. Naffziger, University of California Medical School, San Francisco. Ann. West. Med. & Surg. 2: 397-401, Sept. 1948.

The staring eye (Dalyrimple's sign) is caused by retraction of the upper lid with exposure of a band of sclera above the cornea. It is unfortunate that it gives the illusion of exophthalmos, although the latter may be associated with it. In exophthalmos unassociated with lid retraction, (as in simple mechanical proptosis), the upper lid maintains its normal relation to the cornea and it lengthens. In thyroid disease there may be lid retraction with or without exophthalmos and proptosis with or without lid retraction. In exophthalmic goiter, lymphorrhages are found in intrinsic eye muscles and there is an increase in the fat content of eye muscles and other orbital tissues. Exophthalmos has been produced in animals by injection of whole anterior pituitary or of its thyrotropic fraction. The thyroid bears a common but variable relationship to progressive exophthalmos, eye muscle dysfunction, and puffy lids. Many patients with exophthalmos have been those with proptosis after thyroid operations.

Treatment with thyroid substance or thyroid and iodine is of some help in controlling progression and promoting water excretion. The greatest possible area of decompression is desirable. The lids should be sutured at operation and a compression bandage worn. A drain of the operative site down to the orbit for 24 hours lessens postoperative swelling. Unilateral decompressions are required where there is predominant protrusion on one side. Surgical methods have been proposed, such as decompressing the orbit into the frontal and ethmoid sinuses and even into the antrum. Orbital decompression is reserved for cases of considerable gravity. Thyroid with iodine is the principal medical measure.

Unilateral Exophthalmos Due to Cerebellar Tumor and Orbital Defect. W. James Gardner, Cleveland Clinic, Cleveland, Ohio. J. Neurosurg. 5: 500-02, Sept. 1948.

A woman of 26 was admitted because of blindness and protrusion of the left eyeball. She had been subject to generalized headache for 18 months. Five months after onset of the headache, she was in an automobile accident which caused unconsciousness and severe ecchymosis about the left eye. Three months later the left eye began to protrude, with progressive loss of vision in both eyes, resulting in total blindness six weeks prior to entry. The pupils were dilated and fixed; there was advanced bilateral papilledema and severe exophthalmos in the left eve. The exophthalmometer reading in the right eye was 20 mm., and in the left eye, 28 mm. A meningioma of the left sphenoid ridge with extension into the orbit was suspected. A left frontal craniotomy disclosed a defect in the roof of the orbit with a herniation of the brain substance into the orbit. Seventeen days after this operation, a ventriculogram was made, disclosing obstructive hydrocephalus. This was followed by a suboccipital craniotomy and removal of a cystic hemangioma from the medial portion of the right cerebellar hemisphere, followed by reduction of the exophthalmos. It appears likely that the hydrocephalus resulting from the cerebellar tumor caused a protrusion of brain substance through a traumatic defect in the orbital roof, resulting in the unilateral exophthalmos. 2 figures.—Author's abstract.

Thyrotrophic Exophthalmos. C. J. B. Muller. South Africa Med. J. 23: 221-22, No. 13, 1949.

The pathogenesis, symptomatology and differential diagnosis of thyrotrophic exophthalmos are briefly discussed. Treatment aims at reducing the thyrotrophic output of the pituitary. In a native woman, age 28, the lids showed gross edema with superficial ulceration along the margins, marked chemosis and restriction of the eye movements, and with swelling of the lacrimal sacs. Both disks were swollen. Examination showed exophthalmus: R. eye 20 mm., L. eye 24 mm., and B.M.±7. For two months, despite local and general medical treatment, the exophthalmos became worse. The patient was then referred to the x-ray department and received 250 K.V., 1.5 cm., 1 mm. A1. filters, 50 cm., F.S.D. Two lateral pituitary fields of 7 x 7 cm. were

treated by 100 r daily to each for 18 applications, giving a dose at the pituitary of 1850 r and a skin dose of 2150 r over a period of 24 days. The results were good. Control examination after one year showed completely normal lids, fundi, vision, position of bulbi and B.M.R. 2 references. 3 figures.—A. Jokl.

Surgery of Grave Perforating Bulbus Injuries (Zum operativen Vorgehen bei schweren perforierenden Bulbus Verletzungen). G. Saubermann. Ophthalmologica, Basel 116: 107-09, Aug. 1948.

The wound penetrated far into the vitreous body, which was totally exposed. The thin junction between the connective tissue and conjunctiva was resected along the entire length and stitched rapidly, to prevent escape of vitreous humor. Female hair stitches were passed through the whole thickness of sclera and connective tissue, and suture imbedded in the conjunctiva to ensure firmness. The connective tissue proper was sutured by the Page method. Antiseptics were given as prophylaxis, and the bulbus was bathed in saline. The injured upper lid was sutured. There was rapid recovery, with no separation of retina. Examination one year later showed no irritation. The pupil was slightly dilated, the reflex weakened. A few small specks were seen in the vitreous humor, which was scarified. The vision was poor, with restriction of the field. Intra-ocular tension was slightly below normal.

In such operations the approach is selected on the basis of two factors: length of wound and strength of impact. Firm sutures in the sclera are imperative for complete healing.

Proptosis Due to Neuroblastoma of the Adrenal Cortex (Hutchinson's Syndrome). Report of a Case. Ronald A. Cox, M.D., Washington, D. C. Arch. Ophth. 39: 731-38, June 1948.

Neuroblastoma of the adrenal cortex is a rare disease, occurring almost exclusively in children, and frequently metastases to the orbit are the first signs of the condition. The average duration is two to five months before fatal termination. A case is presented. A discussion of the disease is given. 7 references. 3 figures.

### 17. Glaucoma and Hypotony

Cholinesterase Activity of Aqueous in Glaucoma Patients. Stephen de Grósz, Budapest, Hungary. Collected Studies from the University Eye Clinic, University of Budapest, No. 1, 1948.

After 1/2% diocaine anesthesia, the aqueous is withdrawn through an Amsler needle into a tuberculin syringe. This is transported into a Nicolai container. Following dilution with bicarbonated Ringer's solution, the manometric method of Ammon was applied in the Warburg respirometer for three hours. Normal aqueous showed a cholinesterase value of 1.2 cm.  $CO_2$  per ml. of aqueous. In glaucoma patients a great variation was found

(1.5 to 8.6); a definitely raised value could be detected in some cases, though not in all (mean value 3.34). Possibly some types of glaucoma possess raised cholinesterase activity, while serum values are within normal range (Rados). Local disturbance of cholinergic mechanism in glaucoma is suggested in accordance with Bloomfield. This statement, however, cannot be generalized, as the behavior of pathologic aqueous is not uniform (preliminary report). Similar observations were made by Matteucci in Annales d'oculistique 180: 670, 1947, independently of previous paper.—

Author's abstract.

Glaucomatous Uveitis. N. M. Macindoe, Sydney. M. J. Australia 2: 426, Oct. 9, 1948.

Four cases of acute glaucoma secondary to uveitis in patients under 45 years of age are reported. In each case the presenting symptom was acute glaucoma, secondary to iritis, hidden cyclitis, early peripheral chorioiditis and circumpapillary chorioiditis. Treatment was successful and involved paracentesis of the anterior chamber, atropine drops, and oral sulfadiazine. Paracentesis was good therapy in glaucomatous uveitis but very poor therapy in glaucoma simplex. Atropine alone would have raised the tension still higher and produced further loss of vision. The eye was rendered quiet by instillation of atropine following paracentesis.

In 2 cases the rise in pressure was caused by the albuminous and cellular content of the aqueous, in a third by the swelling of the vitreous, and in a fourth by obstruction to the venous return. In no case was the angle obstructed by peripheral anterior synechia. Acute glaucoma in persons

below the age of 45 years might mask uveitis. O references.

Congenital Glaucoma. G. H. Barham Black, Adelaide, Australia. M. J. Australia 2: 421-22, Oct. 9, 1948.

Seven cases of congenital glaucoma are discussed, including one of juvenile glaucoma which is a rare disease, apparently caused by an anatomical defect at the angles of the anterior chamber plus poor development or absence of Schlemm's canal. Heredity is probably not involved except in juvenile glaucoma, where it is of paramount importance. Differentiation of hydrophthalmia from megalocornea is difficult; in the latter tension and vision are normal, the cornea clear, splits in Descemet's membrane absent, and heredity is involved. In hydrophthalmia the cornea may be large from stretching, and signs of raised tension eventually appear. Splits in Descemet's membrane occurred in 2 of the cases. At operation the corneae were variably edematous.

The operation employed was corneo-scleral trephining. Miotics were not used. The prognosis was as follows: after operation, 1 patient in 3 would be blind, 1 would have visual acuity less than 6/60 and 1 would have more than that at age 12; after age 25, the visual acuity would not be above 6/36. Without operation 1 patient in 4 would retain visual acuity of 6/60 or more, 2 would be blind by 12 years, and 60% of patients between 25 and 50 years would be blind. These figures are the results of many studies. 0 references.

Excessive Myopia and Glaucoma. H. U. Möller. Acta Ophth. 26: 185-93, No. 2, 1948.

In a group of 11 patients there was high incidence of severe glaucoma simplex in association with extensive myopia (10 to 20 diopters), moderate tension (22 to 36 mm.), atrophy of the choroid and the disks (with or without cupping). The narrowed fields showed a shape typical for glaucoma, but scotoma was not always present.

Dr. Rosengren pointed out that hyperopia tends toward primary acute prodromal glaucoma, while myopia is usually accompanied by glaucoma simplex. However, normal eyes are equally susceptible to the latter form, hence there is no true predisposition in this case.

The Eye and the Diencephalon. V.—The "Luminous Sensibility" in Simple Chronic Glaucoma. (Occhio e diencefalo. V° — "La sensibilità luminosa" nel glaucoma cronico semplice). A. Rubino and L. Pereyra, University of Florence, Italy. Riv. oto-neuro-oftal. 23: 227-36, July-Aug. 1948.

Twenty cases of uncomplicated chronic glaucoma are reported. Five of these patients presented the condition in one eye only. In 12 the tests were done at night (1 A.M.) as well as the afternoon (5 P.M.). Results are given in the form of average value for the whole group and visualized in the form of a series of graphs. A study of these graphs shows that in this material the decrease in light sensitivity usually occurs early in the disease and seems to be independent of any changes observed in the visual acuity, the perimetric fields and the increase in intra-ocular tension.

In consideration of the teachings of Magitot (Annales d'ocul., 1947, 180: page 237) the authors concluded that the decrease in luminous sensibility in glaucomatous patients arises as a lesion of the diencephalon, probably of a vascular nature, which first evidences the light sensitivity defect and later eventuates in all the other symptoms making up the glaucomatous syndrome. 21 references. 6 figures.

The Eye and the Diencephalon. VI.—The Glycemic Curve under Glucose Tolerance Conditions, and the "Photo-Glycemic" Reflex in the Glaucoma Patient. (Occhia e diencefalo. VI°—Curva glicemica da carico de glucosio e riflesso "fotoglicemico" nei glaucomatosi.). A. Rubino and I. Esente. University of Florence, Florence, Italy. Riv. oto-neuro-oftal. 23: 237-43, July-Aug. 1948.

Ten cases of simple chronic glaucoma are reported. Two of these patients presented a so-called normal curve, that is, under the light excitation of the retina, the glycemic curve exhibited a drop. This is designated the "photo-glycemic" reflex. Light excitation in 8 of the 10 subjects with glaucoma, however, exhibited a curve in sharp contrast with that of the normal subject. This difference consisted of an actual rise in the glycemic curve during the period of light stimulation. In 5 of these patients, the rise in the glycemic curve was actual, that is, the quantity exceeded that recorded for the same curve taken in the dark with the light excitation; in the remaining 3 of the 8 the rise was only virtual.

This abnormal behavior of the glycemic curve is attributed by the authors to a disturbance in those functional areas of the diencephalon which Magitot (Ann. d'ocul., 1947, 180; 1) indicates as the seat of the original disturbances in glaucoma. 7 references. 8 figures.

Preliminary Data on the Diencephalic Functioning in Primary Glaucoma (Dati preliminari sulla funzionalità diencefalica nel glaucoma primitivo). G. Kluzer and P. Matteucci, Torino, Italy. Riv. oto-neuro-oftal. 23: 307, July-Aug. 1948.

Nineteen cases are the basis for this preliminary report. The sleep rhythm in this material exhibited, in most cases, a deficiency in sleep with an occasional case of hypersomnism. The basal metabolism tended to be elevated. Water metabolism exhibited cases of polyuria, oliguria and retention of water during the tolerance tests. The glucose tolerance tests showed decided abnormalities. Under the barbiturates the intra-ocular pressure, mydriasis and other eye symptoms were favorably affected.

Studies of the psychic personality are progressing and to date have given ample evidence of emotional disturbances. In this material there was one case of a woman suicide with a dysthymic depressive syndrome, a

delirium of persecution and a typical paranoic attitude.

Role of Emotion in Glaucoma. C. S. Sykes, University of Texas, School of Medicine, Galveston, Tex. Dis. Nerv. System 10: 104-07, April 1949.

While the role that emotion plays in glaucoma has been recognized by ophthalmologists for many years there has been little about it in the literature. A report is made of four glaucoma patients who have been followed for 20, 18, 14 and seven years respectively. Emphasis is placed on the part their inner lives played in the course of the disease. A discussion of theories concerning the means by which the neurovegetative and endocrine systems influence the intraocular pressure is given. Our knowledge of this is hypothetical and obscure, and medicine must advance much further if this relationship is to be solved. Emphasis is placed on the necessity of realizing that we are not dealing with an eye disease alone but with a sick person. The mentality and environment of these people should be understood, and attention given to those factors as well as local therapy and surgery of the eye.

Results of Vogt's Perforating Cyclodiathermy in One Hundred Cases (Résultats de cent cas de cyclodiathermie perfornate de Vogt). Thomas Cordier, Algan, Poirot, Nancy, France. Rev. med. de Nancy 73: 308, Aug.-Sept. 1948.

In 100 cases in which Vogt's method of cyclodiathermy was employed in the treatment of glaucoma, there were 3 cases in which complications occurred, in one, atrophy of the eyeball, in another sympathetic ophthalmia and in the third, hemorrhage into the vitreous. On the basis of the results obtained, the chief indications for the use of this method are: chronic glaucoma in aphakic eyes, hemorrhagic glaucoma, and infantile glaucoma with buphthalmia. This operation may also be employed in other cases in which the usual methods have failed to reduce the intraocular tension.

Results of Trephine Operations. C. S. Colvin, Orange, New South Wales. M. J. Australia 2: 425-26, Oct. 9, 1948.

Attempts to control glaucoma as long as possible with miotics have often been a matter of years. When either the visual acuity or visual field deteriorated progressively despite miotics, a trephine operation was advised, preferably before the visual acuity dropped below 6/12. In acute glaucoma, trephine was done if the eye settled down with the half-hourly instillation of eserine. If miotics produced no decongestion, iridectomy was done or an iridencleisis performed with the Graefe knife. Cyclodialysis was used, chiefly after cataract extraction and when needling was required. Iridencleisis was used chiefly for secondary glaucoma, such as exfoliative capsular glaucoma.

Trephining was reported in a series of 45 cases, most of which were primary glaucoma simplex. In a few cases lens opacity soon developed post-operatively and cataract after a longer time. Chorioidal detachment occurred in 3 cases, but in all the condition settled down. Late infection was the greatest risk. In 2 cases the tension rose postoperatively and the eye was removed. Improvement in visual acuity and visual field sometimes followed operation. In 11 cases the visual acuity deteriorated later. Chance of success was greater when the operation was done before visual acuity was less than 6/12 and before the visual field was very defective. After two years there were 8% failures; after 10 years 15% of patients traced had full vision. 0 references.

Clinical Experiments with New Ways of Influencing Intraocular Tension. I. Effect of Rice Diet. Frederick W. Stocker, M.D., Lawrence B. Holt, M.D., and James W. Glower, M.D., Durham, N. C. Arch. Ophth. 40: 46-55, July 1948.

This study was undertaken to try to show how formation and circulation of the aqueous and the intra-ocular tension may be influenced by other than surgical procedures and miotics. Three methods were used, and the first, consisting of a rice diet, is reported here. The Kempner diet devised for treatment of "hypertensive vascular disease" was used on 12 patients in the experiment. Their tension was taken before breakfast, in bed, for at least 10 days, except in 1 patient who was only followed for three days. Later, at regular intervals over an average of seven and a half weeks they were reexamined. In all these patients a striking reduction in intra-ocular pressure was noted as soon as the rice diet was instituted. Reductions of 5-7 mm., persisting over long periods, were not uncommon. While most patients also had a drop in blood pressure, the relationship between the two systems was not definitely parallel.

Patients who were not on the rice diet did not show an equally great drop in intra-ocular pressure when the blood pressure was reduced by other measures. Nor did patients who had been on the rice diet before intra-ocular tension was taken show any additional reduction when further measurements were made. The facts point to the conclusion that there must be some specific factor in rice which causes this drop in intra-ocular pressure. Possibly it is due to reduction in secretion of sodium by the ciliary body. This would be in line with the changes taking place in the kidney, where reabsorption of sodium by the tubules is decreased after a rice diet. 13 references. 1 table. 5 charts.

The Influence of Gum Arabic and Dextran on the Blood-Aqueous Barrier and the Intraocular Pressure. E. H. Bárány. Ophthalmologica, Basel 116: 65-79, Aug. 1948.

Injection of gum arabic solutions into rabbits (high colloidal osmotic pressure) caused lasting hypotony in the aqueous humor, irrespective of concentration. Native and partially hydrolyzed dextran (mol. wts. 10° and 2x10°) effected the same drop of intra-ocular pressure. Hence, the colloidal osmotic pressure of the injected material is not directly responsible for the lowered tension in the anterior chamber. The actual cause is increased permeability of the barrier between blood and the aqueous humor, admitting excess of plasma proteins into the anterior chamber. This raises the colloidal osmotic pressure, i.e., the colloidal component of intra-ocular tension, which is a negative term. Its increase means lowered tension.

In man, breaking down of this barrier may be caused by some pathologic changes of the capillaries or an abnormal rise in plasma proteins. This accounts for hypotony of the anterior chamber observed in many eye disorders. A slit lamp test might confirm this view (opalescence of the aqueous humor). 21 references, 6 figures.

# 18. Lacrimal Apparatus

Contribution to the Operation of Dacryo-Cysto-Rhinostomy (Contribución a la dacrio-cisto-rinostomia). Jose Arriaga Cantullero, Aviation Medical Commander. Arch Soc. oft. hisp. amer. 8: 1024-30, Oct. 1948.

In closing the wound after the operation, the W-suture of Blaskovics is employed. A loop of the thread is passed through the flap of the wound on the nasal side and then out again on the eye side. This stitch thus includes all the tissues down to the opened sac. Each of the protruding ends are then armed with needle and passed in the same manner beside and at the appropriate distance from the mother loop. The loop is then divided and the two U-sutures thus produced are united over a pledget of gauze. The upper end of the upper U-suture is made to include the tendon of the orbicularis muscle. The skin is united with a continuous suture; this, however, may not be necessary as the original U-sutures often provide a perfect approximation of the skin edges.

These U-sutures are easily removed later without producing pain or dislocation of the deeper tissues, and nothing is left in the wound to act as a foreign body. 4 references. 6 figures, Recent Advances in Hemostasis. Their Applications in the Technic of Dacryo-Cysto-Rhinostomy. (Recientes avances in hemostasia. Su aplicación a la técnica de la Dacriocistorinostomia). Angel Moréu, Valencia, Spain. Arch. Soc. oft. hisp. amer., 8: 1024-30, Oct. 1948.

The fibrin foam prepared by Juan Montoro has now been used in 53 operations on the lacrymal passages. The preparation consists of balls of fibrin foam floating in a solution of thrombin and penicillin. Lack of facilities prohibits the production of a dry fibrin foam. The ball of fibrin foam is fished out with a sterile tenaculum and introduced into the region of the bleeding. The material is then pressed into place and retained for a sufficient period of time by a pledget of cotton which has been soaked in the thrombin-penicillin solution. The bleeding ceases at once and the material will not be resorbed for 15 to 20 days.

Since using this material the author has not had a single case of hemorrhage; even the cotton strip left in the nose for a day following the operation is no longer tinged with red. These results are presented, not as an exemplar of a finished product, but in the hope of being of assistance in this fearsome complication of the operation.

An Unexpected Finding during a Dacryo-Cystitis Operation (Inesperado hallazgo al operar una dacriocistitis). Antonio Alcala Lopez. Arch. Soc. oft. hisp. amer. 8: 1046-54, Oct. 1948.

During a classic operation for dacryo-cystitis in a 26 year old patient, who had suffered since the age of 11 from what was considered a lacrymal fistula, a hard mass was detected in the tissues of the lower lid just external to the lacrymal sac and somewhat beneath the edge of the lower lid. The mass was apparently a canine tooth in process of decay. The tooth was somewhat smaller than that of an adult, and somewhat larger than that of a child. The fistula led to the tooth and did not involve the lacrymal canal. A simple lavage of the lacrymal tract would have detected the error. The presence of the tooth is explained on the basis of a dermoid cyst resulting from failure of obliteration of the upper end of the embryonic oblique fissure of the face. I figure.

Dacryocystorhinostomy. John Gerrie, Royal Infirmary, Foresterhill, Aberdeen, Scotland. J. Laryng, and Otol. 62: 705, Nov. 1948.

A 63 year old woman complained of watering of the left eye for many vears, with occasional purulent discharge. Obstruction was found in the nasolacrimal duct. A left dacryocystorhinostomy was done, and the wound healed uneventfully. This was originally the West operation, draining the sac from the inside. It has been superseded by the Toti operation. The West operation was more effective in the mucous type of dacryocystitis, but was unsuitable for purulent types of the disease. O references.

Dacryocystorhinostomy. Marion W. Hester, Lakeland, Fla. J. Florida M. A. 35: 223-26, Oct. 1948.

Dacryocystorhinostomy is one of the most successful operative procedures but general acceptance of it was slow. The operation usually reestablishes normal tear drainage from the conjunctival sac and removes a nest of chronic infection. Pathogenic bacteria disappear from the lacrimal sac two or three days postoperatively. The major indication for the operation is obstruction of the lacrimal passages at the lower part of the lacrimal sac or in the nasolacrimal duct. Other indications are after trauma or dacryocystectomy. There are no age limits. The operation is contraindicated in malignant disease of the sac or incurable sac disease. The operation should be postponed in acute dacryocystitis or extensive nasal disease.

In the West operation the lateral nasal wall adjacent to the lacrimal sac is removed by an intranasal approach. Failure occurs because of early closure of the opening. In the Toti-Mosher operation the approach is through an external incision. Another method is transplantation of the severed end of the sac. The most widely used method is the Dupuy-Dutemps procedure, and the results are consistently good; the most frequent causes of failure are incorrect diagnosis and faulty operative technic. 8 references.

Dacryocystorhinostomy. J. Brault. Tr. Canad. Ophth. Soc., 1948, pp. 29-37. University of Toronto Press, 1949.

Thirty-four patients were operated upon according to the technic of Dupuy-Dutemps. The artificial opening remained patent in 33 of these, 28 of whom were cured of epiphora; 5 had slit canaliculi and continued to have some epiphora.

Preoperative examination should include study of the rhinopharynx, bleeding time, and blood clotting time. Local block anesthesia is satisfactory. It is sufficient to cover only the posterior wall of the bony opening into the nose. This can be done by a large flap of nasal mucosa. The anterior wall of the opening is not as long as the posterior, is formed of hard bone, and is not likely to be the site of granulations which could block the hole. 12 references. I figure.

Diseases of the Lacrimal Gland and Ocular Complications. *John A. MacMillan*, *Montreal*, *Canada*. J. A. M. A. 138: 801-05, Nov. 13, 1948.

In keratoconjunctivitis sicca there are burning and itching of the eyes, with occasional impaired vision and photophobia. There may be stringy mucus in the conjunctival sac. Dryness of the mouth, parotid swelling and arthritis often occur. Occlusion of the canaliculi with an electrocoagulation needle should be instituted early. Neuroparalytic keratitis at times follows operation or alcohol injection for relief of trigeminal neuralgia. It may be a result of drying from lack of tear secretion. The region heals as soon as the lids are sutured together and it remains so as long as they are left closed. Closure of the canaliculi holds promise.

The lacrimal gland, orbital and palpebral lobes, may probably be removed with safety if Krause's glands are not affected. A common complaint during winter is oversecretion of tears, chiefly in older persons. If troublesome, removal of the inferior lobe of the gland gives satisfactory results. After proper excision of the lacrimal sac tearing is uncommon. If the epiphora is annoying, excision of the inferior lobe is usually satisfactory. The crocodile tear syndrome results from misdirection of fibers during seventh nerve regeneration after paralysis. Lacrimal gland tumors are relatively rare. 27 references.

Implant of "Vitallium" Tube in Treatment of Stenosis of the Lacrimal Duct. Vito La Rocca, M.D., New York, N. Y. Arch. Ophth. 39: 657-60, May 1948.

In preference to dacryocystorhinostomy the insertion of a vitallium tube as advocated by Muldoon is recommended for treatment of stenosis of the lacrimal duct. This tube is 3 mm. in diameter and 18 mm. long, with the lower end slightly tapered. Certain modifications of this technic are presented, with reports of 2 cases. The tube is modified by a holding loop 4 mm. from the opening of the tube into the lacrimal sac, and a small ring at the upper end. A suture is passed through the loop and attached to the periosteum of the nasal bone. The loop also serves to prevent the tube from slipping down into the bony canal. The tube is 24 mm. long and its upper 4 mm. are inserted into the lower part of the lacrimal sac. Local anesthesia is used. 3 references. 3 figures.

Mucous and Salivary Gland Tumors in the Lacrymal Gland. E. Godt-fredsen. Acta. Ophth. 26: 167, No. 2, 1948.

Ten cases observed and followed up during a 15 year period involved fibromyxoepitheliomas and cylindromas (cystic basalomas). Metastases were seen in all cases, but only 6 tumors proved malignant on microscopic examination. Treatment (surgery, with or without irradiation) was ineffective.

# 19. Eyelids

Papilloma of the Lids of Unusually Long History. L. Schrire, South African M. J. 23: 307, No. 16, 1949.

The patient, age 70 years, had massive growths of both upper and lower lids of the left eye, which were present soon after birth. They were removed at the age of 8, but recurred soon afterward, and have been present ever since. During the last few months they have increased slightly in size. The right eye is normal. The left eye has 6/9 vision and normal media and fundi. The V.A. of the left eye could only be tested after separating the lids manually. Massive papillomatous growths of both upper and lower lids with ectropion of lower lid were found. The tumors were removed under local anesthetic with cauterization. Healing was uneventful and the cosmetic result was good. 1 figure.—A. Jokl.

Blepharospasm and Palpebral Tic in a Case of Productive Maxillo-Ethmoidal Sinusitis and Rhinitis (Blefarospasmo e Tic palpebrale da rinosinusite maxillo-etmoidale produttiva). Ernesto Pallestrini, University of Genoa, Genoa, Italy. Riv. oto-neuro-oftal. 23: 275-83, July-Aug. 1948.

The patient, 35 years old, developed a wide spread rhino-sinusitis on the left side on 3 different occasions within a few months. Each time there was a bilateral blepharospasm and accompanying spasm of the frontalis muscles, with a myosis and some conjunctivitis in the left eye. Each of these attacks was treated by surgery of the nose with some relief. Cure of the conjunctivitis did not affect the condition of spasm. Finally a radical (Denker) operation, with thorough drainage and removal of polypous and thickened mucosa, which was especially pronounced in the ethmoidomaxillary recess of the maxillary sinus, resulted in lasting relief from the spasmotic symptoms. The condition is regarded as an exaggeration of the normal Weil naso-palpebral reflex resulting from irritation of the sympathetic reflex arc, and is therefore designated a naso-ocular sympathicopathy.

Operative Technic for the Correction of Trachomatous Ptosis (*Procedimento operativo per la correzione della ptosi tracomatosa della palpebra superiore*). G. B. Bietti, Pavia, Italy. Rev. Intern. du Trachome 25: 199-203, No. 3, 1948.

The simple excision of the tarsus is not always sufficient in the trachomatous ptosis, and a technic is proposed which has been used in such cases where the complications were especially severe. By cutaneous approach, the tarsus and a portion, more or less important, of the levator palpebra superioris are excised without disturbing the conjunctiva. From the cosmetic standpoint, it is important to fashion an orbitopalpebral fold, which can be obtained by Elschnig or Blaskovicz procedures. This operation, which also can correct a potential entropion, has the advantage of being easier than the Blaskovicz procedure in these cases, as the eversion of the upper eyelid is very difficult due to the cicatricial retraction; also, it prevents excision of the tarsal conjunctiva, which would finally add to the shrinkage of the fornix. 2 references. 5 figures.

Entropion in Infancy Caused by Folding of the Tarsus. Report of a Case. *Professor A. Kettsy*, *Debrecen. Hungary*. Arch. Ophth. 39: 640-42, May 1948.

A 37 days old infant was seen with a marked entropion of the left upper lid. The history dated back to inflamed eyes starting 3 days after birth, and he was treated with wet compresses. The right eye cleared up but the left became worse. The tarsus was found to be folded horizontally on itself and eversion of the lid made no lasting difference. The tarsus was held smooth by means of a lid plate placed in the upper cul-de-sac. A gauze roll 4 mm. in diameter was placed on the lid above its margin, and was sewed to the tarsus with 2 mattress sutures. These sutures and the roll were removed after five days. The entropion was cured. The damaged cornea cleared up except for a central macula. 3 figures.

Heteroplastic and Isoplastic Skin Grafts. With Report of Successful Repair by Isografts, of Bilateral Ectropion of Four Eyelids, Due To Ichthyosis Congenita. Edmund B. Spaeth and O. A. Cappriotti, Wills Hospital, Philadelphia, Pa. Plast. & Reconstruct. Surg. 3: 707-12, Nov. 1948.

To the present time there has been an outstanding lack of success in the use of isographs. Blood-type matching, as well as the consideration of the M and N factors, and the Rh factor between donor and recipient, is probably not the whole reason. These may not even be of significance.

There have been only 5 successful isographs in the literature for Ichthyosis Congenita to date. The case presented here was successfully grafted for this disease. The patient was a 15 year old white boy with Ichthyosis which started two weeks after birth. It soon became generalized and the ectropion started at the age of 8. The child had had 2 attacks of ulcerative keratitis prior to surgery. Before the donor was selected, attention was paid to donor and recipient matching as to blood type on all points. The lids were grafted in 2 operations, 1 a month before the other. Intermarginal adhesions were continued for 12 weeks after the operations. Both operations were successful.

The case was presented without recommendation for preoperative planning for future similar cases. Success in these 2 separate operations was probably due to the very thin grafts which were obtained from the donor; the absolute hemostasis achieved in the graft site; the close approximation obtained with the grafts to the underlying orbicularis fibers through the use of thormboplastin glue; and the last, the meticulous cross matching which was done between donor and recipient. The time which has elapsed since the surgery is now sufficiently long to expect this surgical result to be permanent. 8 references. 4 figures.

Surgery of Entropium Cicatriceum (Ein operatives Verfahren gegen Entropium cicatriceum). J. Mahoros, Budapest, Hungary. Acta Ophth. 26: 363-72, No. 3, 1948.

Total internal tarsotomy is described, reversing the steps of the Panas technic. By using the Imre suspension, the lid is readily unfolded from the tarsus, the entropium raised and fully exposed. The entire infected area is then incised at the optimal distance of 2.5 to 3 mm. from the edge of the lid. This prevents necrosis of the edge and injury of the arcus targens (narrow width), or thickening of the edge after healing (excessive width). Hemorrhages are avoided by pressing on the lid plate (in the Imre method). The longitudinal incision, the main features of this procedure, will not injure the thin, soft tarsal conjunctiva, an advantage over a transverse cut. Plain suturing, usually 3 stitches, is sufficient. To avoid injury of the secretional cell layer, the stitches are passed through the ducts but not the bodies of the Meibom glands. Loose knots must be used to facilitate removal of sutures. Threads left in will produce ptosis of the lid.

Lymphosarcoma Presenting as Oedema of the Eyelids. M. T. F. Carpendale, St. Thomas's Hospital, London, England. Lancet 1: 305-06, Feb. 19, 1949.

Lymphosarcoma presenting as edema of the evelids is rare. The case presented here is a woman, age 61 years. She had no symptoms other than edema of the left evelids. Blood count and skiagrams were negative. Tentatively diagnosed as facial cellulitis, the condition was treated with penicillin, Later Benadryl was used (angioneurotic edema?), during which time the swelling increased, completely closing the eye. Finally anodal galvanism was used, which produced marked reduction in the swelling. She was discharged after three weeks in hospital. Readmitted a fortnight later, the patient was exsanguinated following a severe hematemesis (Hb 38%, RBC, 2,500,000 per c. mm.), but there was no periorbital swelling. Soon after readmission, muscle wasting appeared in both hands. The swelling recurred as a firm periorbital lump which disappeared subsequent to a small biopsy. (Biopsy-lymphosarcoma). Again it reappeared but responded to radiotherapy, though soon multiple lesions appeared in skin, bronchial plexus, intestine and lungs, all proven at postmortem. The patient died after 10 weeks in hospital. Necropsy showed hemorrhage from an ulcerated secondary growth in the stomach, and generalized lymphosarcoma.

The interest in this case is in its apparently inocuous origin with no other symptoms or previous history, the disappearance of the swellings three times following electrotherapy, hematemesis and biopsy; and finally, at necropsy, 14 weeks after first admission to hospital, the widespread involvement of nearly all the tissue of the body. Prior to biopsy this case looked more like a simple inflammatory reaction rather than this malignant disease. 4 references. 4 figures.—Author's abstract.

Neoplasms of the Eyelids. B. K. Rank, Melbourne, Australia. M. J. Australia 2: 422, Oct. 9, 1948.

In neoplasms occurring in the lids surgical excision was found to be the best cure without complications and gave the best cosmetic results provided 3 conditions were met: (1) that excision was truly adequate; (2) that tissue loss was respected and no tension factors were introduced in wound closure; and (3) that reparative methods for any resultant defect were those best suited to the case. Radiotherapy is not considered to be the better form of treatment for neoplasms of the eyelids. Innocent neoplasms are of 3 main types: papillomata, melanomata, and angiomata. Surgical removal can be effected by: (1) simple excision or electrolytic destruction, unless excess scar formation would follow; (2) excision, with closure of a large skin defect by a free skin graft or local flap arrangement; or (3) if the innocence of the tumor is doubtful, a bulk excision of the lid is done, and up to one-third of a lid margin can be removed.

Malignant eyelid neoplasms are mostly epithelioid tumors, ranging from epithelioma to basal cell carcinoma, and the differentiation is not sharp.

Treatment involves cure or destruction of the growth; cosmetic results and repair methods are secondary. Excision should be adequate in extent and depth, allowing thorough microscopic examination of all areas and quick further excision if needed. Radiotherapy is supplementary but has serious disadvantages. O references.

Eyebrow Repair by Thin Deep Grafts Patrick Clarkson. Guy's Hosp, Gaz. 62: 256-58, Sept. 25, 1948.

Thin deep grafts for evebrow repair has been more frequently used in the United States than in Great Britain, Narrow grafts, about 3 mm, wide, are taken from the hair-bearing scalp, including some subcutaneous fat and with the hair follicles intact. An incision along the line of the missing evebrow is made into the subcutaneous fat; in men who require thick functional evebrows, two parallel incisions may be made, 2 mm, apart, and a graft sutured in each incision. The area between the two grafts that is not hair-bearing can be excised several weeks later. In women who do not need heavy eyebrows, the graft may be taken from the opposite eyebrow, so that 2 thin symmetrical evebrows result. In the case of 1 woman, the outer half of the left eyebrow was restored by a graft from the intact inner half of the same evebrow; the opposite evebrow was then partly excised to make the two evebrows symmetrical. A continuous steel suture (40 gage) is used to fix the grafts in place; it is passed through the dermis of the edges of the incision and the dermis of the graft. A pressure dressing of tulle gras, pressure wool and elastoplast is employed; the wire suture is removed on the sixth to the tenth day. In over 20 cases in which this type of graft has been used for eyebrow repair in the past two years, an "edge to edge" take was obtained in every case. After the original depilation, a uniform growth of hair, appearing like a normal evebrow, resulted. 3 figures.

#### 20. Orbit

New Growths and Pathologic Changes of the Orbit (Histopathologie et Neoformations de L'Orbites). *H. Pichette*. Laval Med. 14: 125-43, Feb. 1949.

Many changes in the orbit can be considered perversions of cell growths. It is cases are presented. A newborn boy showed a large mass in the right orbit. At operation it was found to be fixed to the periosteum. A large part of it was removed. The growth has recurred and has not been controlled by x-ray therapy. Section of the tumor showed glial tissue. An 18 year old girl developed a deep, hard, fixed tumor in the right orbit during three months. Section of the biopsy specimen showed undifferentiated cells, probably glial in nature. 4 references, 5 figures.

Fractures of the Orbital Floor. Arthur Gerard DeVoe, M.D., New York, N. Y. Arch. Ophth. 39: 595-622, May 1948.

In this study 34 cases of fractures of the orbital floor were seen and treated late. In Group 1, 6 cases are described where vision in the affected eye was normal. In all cases diplopia had either been overcome or had not

been noticed at all. No treatment was thought necessary, nor was it desired by the patients. In Group 2, 8 patients had severe loss of vision on the injured side. Disfigurement was improved in the 2 cases treated by mechanical elevation of the entire orbital content. In one case this was accomplished by subperiosteal insertion of preserved cartilage, supplemented with tantalum ribbon; in the other by similar use of glass wool. The other 6 cases were not treated for various reasons. In Group 3, 20 cases were seen who had a depressed fracture of the orbital floor with loss of an eyeball. Nine of these were operated upon, receiving insertions of inert material subperiosteally to raise the orbital contents. Results were all gratifying. The operative technic is described. These depressed fractures can be missed unless careful technic in roentgenographic examination is observed. 45 references. 22 figures.

Removal of Orbital Tumor Through Inferior Route with Kuhnt-Szymanowski Repair of Ectropion. Alston Callahan, Medical College of Alabama, Birmingham, Ala. South. M. J. 41: 790-93, Sept. 1948.

Orbital tumors which can be palpated over the infra-orbital rim are best removed through an incision over that rim, avoiding the lateral canthal ligament, the infra-orbital vessels and nerve, and origin of the inferior oblique. Such a case is described in a 68 year old woman. The incision was made across the lateral half of the lower left lid and the orbital septum divided. The tumor was removed by finger dissection without injuring the ocular muscles, and the eye returned to its normal position. The orbital septum and skin were closed without drainage. The tumor was a hemangioma. The eye remained normal postoperatively except for persistence of a preoperative ectropion.

She was readmitted six months later for a Kuhnt-Szymanowski operation., The lower lid was separated into an anterior lamina of skin and orbicularis and a posterior of tarsus and conjunctiva. A triangular section was removed from the central area of the posterior lamina and another triangle from the skin and orbicularis above and lateral to the external canthal ligament. The lateral extremity of the lid was advanced to the outer upper corner of the triangle. The eye and lids were in normal position a year later. 4 references, 6 figures.

Granular Cell Myoblastoma of the Orbit. John H. Dunnington, M.D., New York, N. Y. Arch, Ophth. 40: 14-22, July 1948.

Granular cell myoblastoma is a common tumor of striated muscle tissue, but it rarely occurs in the orbit. Four histologic types of the tumor are noted and described briefly. Confusion exists in the literature as to whether this tumor is identical with or different from rhabdomyomosarcoma. This author believes the two are separate entities. The histogenesis of myoblastoma is discussed, and 2 cases are reported. One was benign, as is usually the case with these tumors, and the other was malignant. Without histologic examination there is no way to identify these from other orbital tumors. 14 references, 4 figures.

X-ray for Orbital Neoplasms. Joseph Laval, Manhattan Eye, Ear, Nose and Throat Hospital, New York, N. Y. Eye, Ear, Nose and Throat Monthly 27: 363-64, Aug. 1948.

Roentgen therapy should be tried in the treatment of malignant orbital tumors before exenteration of the orbit is done since it may obviate need for that mutilating operation. An illustrative case is reported in a 12 year old girl with a myxosarcoma at the left upper and inner orbital margin. Operation did not quite remove all the tumor as it extended too deep. Roentgen therapy was instituted a month later, 13 treatments for a total of 3900 r being given in four weeks. Some blurring of the optic disc developed two months later with vision correctable to 20/40. Lids were red and edematous and evebrow and evelashes gone. Subcapsular opacities developed 15 months later, followed by telangiectases of the bulbar conjunctiva, lids and cheek. Vision had dropped to 20/100 two months afterwards due to increasing cortical and subcapsular opacities. The lens was completely opaque two years and four months after the deep roentgen therapy was started. Treatment of various corneal erosions and recession of the external rectus for exotropia were necessary. A contact glass was worn for corneal protection and the patient was in good condition and without cosmetic blemish 8 years and 2 months after the original operation, though the cataract remained. 3 figures.

#### 21. Allergy

See Contents for Related Articles

#### 22. Anesthesia

General Anaesthesia in Ophthalmology. M. R. Levey. Tr. Canad. Ophth. Soc., 1948. pp. 52-64. University of Toronto Press, 1949.

General anesthesia is the anesthesia of choice for all ophthalmic operations, including cataract extraction. For adults the preoperative sedative is usually atropine gr. 1/100 and morphine gr. 1/8. Intravenous sodium pentothal is used, combined with local, block anesthesia. An airway is introduced into the hypopharynx as soon as the induction is complete.

General anesthesia was administered for 330 ophthalmic operations, including 118 cataract extractions. There were no untoward reactions due to the anesthesic agent. The surgeon was able to do his work leisurely and with confidence, 30 references.

#### 23. Aviation and Military Ophthalmology

See Contents for Related Articles

#### 24. Medical Ophthalmology

The Relationship of Retinal Hemorrhages in Hypertensive Patients to Cerebral Hemorrhage. A Comparison of the Retinal Picture in Hypertensive Individuals who Died of Heart Failure with Those who Suffered a Cerebral Hemorrhage. Louis A. Soloff and C. T. Bello, Temple University School of Medicine, Philadelphia, Pa. Am. J. M. Sc. 215: 660-64, June 1948.

An evaluation of retinal hemorrhage as a prognostic sign of cerebral apoplexy was made in 18 hypertensive patients who died of cardiac failure without cerebral hemorrhage and 17 hypertensive patients who had cerebral hemorrhage. While this group was too small for definite conclusions to be drawn, retinal hemorrhages occurred in 77% of the group without cerebral hemorrhage and in 29% of the group with cerebral hemorrhage. Furthermore, 10 of 42 hypertensive patients with neither cardiac failure nor cerebral accident had retinal hemorrhages. Neither age, sex nor blood pressure seemed related to the occurrence of retinal hemorrhages but it was found that a marked degree of spasm, usually with grade 2 sclerosis, is necessary for their production. The spasm seems to place an extra load on either heart or kidneys which, if not corrected, causes death from renal or cardiac failure before cerebral apoplexy can occur. These studies indicated that retinal hemorrhages have no prognostic value as they are more frequent in patients dving of cardiac or renal failure without serious cerebral accident. 6 references. 6 tables.

"Capillary Fragility" in Hypertension: the Effect of Antiscorbutic Therapy on Results of Tests for "Capillary Fragility." Louis A. Soloff and C. T. Bello, Temple University School of Medicine, Philadelphia, Pa. Am. J. M. Sc. 215: 655-9, June 1948.

The Gothlin and Rumpel-Leede tests for capillary fragility were compared by testing 50 patients with hypertension of long duration and from whom subclinical scurvy had been eliminated by previous saturation with vitamin C for one month. A group of 25 non-hypertensive patients were used as controls. All but 1 control gave both Gothlin and Rumpel-Leede negative reactions.

The Gothlin test was only positive in 2 patients, whereas 33 gave a positive Rumpel-Leede test. The latter test seems more frequently positive with increasing diastolic pressure, yet the patient having the highest pressure and numerous retinal hemorrhages had a negative Rumpel-Leede test. Both tests were negative in 9 patients with retinal hemorrhages, suggesting that there is no relation between a negative test and absence of retinal hemorrhage, nor does a positive Rumpel-Leede test indicate retinal hemorrhage as over 80% of hypertensive patients with positive tests had no retinal hemorrhages. Possible reasons for negative Gothlin tests in these patients were that petechiae may have escaped observation, there might have been an exceptional number of negative results, and vitamin C might have prevented positive test. Administration of rutin did not reverse either test to normal. 8 references, 2 tables.

#### 25. Pharmacology, Toxicology and Therapeutics

The Therapy of Common External Diseases of the Eye. Edward P. Burch, University of Minnesota. S. Dakota J. M. 1: 179-83, May 1948.

Acute glaucoma and acute iritis must be differentiated from conjunctivitis. Delay in giving eycloplegics atropine for iritis and miotics such as eserine or pilocarpine for glaucoma may produce permanent damage to vision. Ulcerative keratitis must also be differentiated from conjunctivitis. To produce regeneration of the corneal epithelium, a sterile eyepad is held

in place. This prevents corneal abrasion from evelid motion.

For foreign bodies 1 or 2 drops of 1 1/2% pontocaine instilled several minutes apart is effective. If removal is difficult the cornea is elevated by applying 1% silver nitrate on a toothpick to the foreign body region. Two % homatropine allays discomfort from ciliary spasm. Vision should be recorded before and after treatment. Sodium sulfacetamide (30% solution or 10% ointment) is bacteriostatic after removal of foreign bodies. Gonococcal ophthalmia and inclusion body blennorrhea respond readily to sulfonamides. The treatment of Reiter's disease is symptomatic. Acute purulent conjunctivitis from gonococcus, meningococcus, streptococcus, staphylococcus or pneumococcus are treated with penicillin drops locally (1,000 units per cc.). The Koch-Weeks infection responds best to 30% sodium sulfacetamide or 5% sulfadiazine. Sulfonamides are used locally and orally in the treatment of trachoma and inclusion-body conjunctivitis. Phemerol is valuable in staphylococcus infections resistant to penicillin.

Chronic conjunctivitis must often be treated symptomatically; a good solution includes: 1 gr. nupercaine, 1/2 gr. zinc sulfate, 1 dram 1:1,000 adrenalin, and saturated solution of boric acid to make 1 oz. Vernal catarrh is occasionally relieved by adrenalin or 3% carbonate wash, or else is treated with beta irradiation of the large lymphoid follicles. In keratoconjunctivitis sicca, estrogens are often beneficial. For the Morax-Axenfeld bacillus, zinc salts are almost specific. For chronic blepharoconjunctivitis, local treatment involves penicillin ointment (2,000 units per Gm.) massaged

into the lids, plus injections of staphylococcus toxoid.

Seborrheic blepharitis responds slowly to astringent washes, daily expression of the Meibomian glands, and applications of silver nitrate as well as yellow oxide of mercury and salicylic acid. Therapy for recurrent stye and chalazion is penicillin, phemerol, or sodium sulfacetamide plus injections of staphylococcus toxoid.

Catarrhal ulcer near the limbus responds to penicillin. Dendritic ulcer requires local anesthesia, then full-strength iodine. Streptomycin is valuable

for chronic ulcerative keratitis.

Modified Method of Etching with Trichloracetic Acid (Erfahrungen mit modifizierten Trichloressigsäureätzungen). E. Bürki. Ophthalmologica, Basel 116: 119-21, Aug. 1948.

The mechanism of etching involves protein coagulation achieved by the first reagent, the trichloracetic acid. The second reagent (acetic acid) dis-

solves the coagulum with formation of an acid-albumin. The skin reaction is usually slight (swelling). The new epithelial layer is somewhat tender, hence the reagents should be used with caution. An exceptionally large xanthelasma was eradicated by means of this procedure to avoid scarification. An 80% solution was smeared on with a wooden spatula wrapped in cotton. The time of contact was greatly reduced. Applications were repeated until the tumorous part appeared thoroughly blanched. Next, concentrated acetic acid was applied and contact prolonged to several hours until the color turned brown and the surface became crusty. Ten to 14 days later the crust dropped off, showing good epithelization underneath.

This method was applied also to a small papilloma and a superficial cavernous angioma. Blood had to be squeezed out before application. Where the tumor affects the connective tissue, a weaker solution must be used, to

prevent impairment of conjunctiva.

Retrobulbar Neuritis: Treatment with Histamine. Bayard T. Horton and Henry P. Wagener, With the Technical Assistance of Evelyn F. Helgerson, Rochester, Minn. J. Lab. and Clin. Med. 33: 1611-12, Dec. 1948.

Histamine was given to 61 patients with retrobulbar neuritis; 34 were women and 27 were men, and the ages ranged from 9 to 49 years. A 1:250,000 dilution of histamine was given intravenously by the drip method at rates varying from 24 to 48 drops per minute. Treatment extended for one and one-half hours daily or every other day for a period of one week to three and one-half years. There were no untoward reactions.

Eighteen patients had previously been given typhoid vaccine intravenously. None regained normal vision, 7 obtained 25 to 75% improvement in vision, 10 had no change, and 1 had greater visual loss. After histamine treatment, 5 regained normal vision, 3 had 75% recovery, 6 had 50% recovery.

ery, 5 had under 25% recovery, and 10 showed no change.

Twenty-two of 61 patients had visual loss for more than a year, and 5 regained normal vision. Five had visual loss for six months to one year, and none regained normal vision. Eight had visual loss for three to six months, and 6 regained normal vision. Twenty-one had visual loss for one month or less, and 12 regained normal vision. Five were indefinite about the onset of visual loss, and 1 obtained normal vision. 0 references.

Therapeutic Experiences in the Etio-Pathogenetic Evaluation of Herpes Zoster. (L'esperimento terapeutico nella valutazione etiopatogenetica dello zoster.) Nicolò Caluzzi, Varese Regional Hospital, Varese, Italy. Arch. ital. dermat. 21: 305-12, Fasc. 5, 1948.

Five typical and severe cases of herpes zoster were given 2 to 3 hourly injections of 40,000 U. O. of penicillin. In all of these cases some of the branches of the trigeminal nerve were involved. In four the process had extended to the region of the eye and in one there was actually an infiltrative condition of the conjunctiva involving the lower border of the cornea, with edema and lowered sensitivity of this structure and sluggishness of the pupil

on that side. Under the penicillin treatment the pain had disappeared, the temperature had dropped to normal and the skin and ocular lesions had begun to regress within 48 hours and before 400,000 U. O. of penicillin had been administered. The results obtained came sooner and were more striking than could be expected from the treatment of cutaneous staphylococcic or streptococcic infections of equal gravity. In fact such results encourage the belief that the etiologic agent of herpes zoster is a filtrable virus and that it is extremely sensitive to penicillin.

Since it is generally believed that if there is a virus of herpes zoster, it is related to those presumably causing other diseases, such as chicken pox, it is suggested that these conditions also be subjected to these therapeutic experiments. 28 references.

The Wander Preparation 115 S and its Effect on Alcoholic Amblyopia (Über das Wander-Präparat 115 S und seine Wirkung auf die Alcoholamblyopie). H. E. Senn. Ophthalmologica, Basel 116: 121, Aug. 1948.

This drug, the sodium salt of nicotinic acid, is harmless even for patients suffering from cardiovascular disorders. The main effect is strong vasodilation, especially of the blood vessels in the head and neck. It is administered orally or intramuscularly. Intravenous injections provoke local skin hyperemia. The reaction is immediate and is accompanied by a sensation of prickling and burning of skin. When given to 2 amblyopia patients, remarkable improvement was achieved. In one case the vision increased from 0.05 to 1.0 after 16 injections; in another, from 0.5 to 1.0 after 12 injections. The effect lasted six months.

Occlusion of the Central Retinal Vein: Report of a Case Treated with Heparin. Robert C. Boyden, Capt. (MC) U. S. N., and Harry A. Kettering, Lt., j.g. (MC) U. S. N. R. U. S. Naval M. Bull. 48: 912-13, Nov.-Dec. 1948.

A 33 year old Marine complained of blurring of vision in the right eye which persisted for 10 days before admission to the dispensary. The visual acuity in the right eye was 20/300. The cornea, lens, and media were clear. The retina was covered with diffuse, radially arranged, flameshaped hemorrhages involving all four quadrants. The veins were dilated and tortuous. The disc was gray and edematous. A diagnosis of thrombosis of central retinal vein was made. Other laboratory and clinical studies were negative. Three days later there was mild intra-ocular tension, and  $2^{c_0}$  pilocarpine was given three times daily. After 11 days vision was still 20/300. At 24 days 100 mg, heparin in 100 cc. normal saline was given four times daily at the rate of 25 drops per minute. After three days of treatment, vision improved; VOD was 20/70. Heparin was discontinued after 9 days. Vision on discharge was VOD 20/200 but was more distinct. Three weeks later there was definite retinal improvement. VOD was 20/200 in periphery and 20/300 centrally. Considerable absorption of the peripheral hemorrhage occurred progressively. The intra-ocular tension did not rise above 10 (Schiotz) at any time. 0 references.

Early Results of Treatment of Tuberculous Lesions of the Optical Fundus with Streptomycin (Premiers résultats du traitement à la Streptomycine sur lésions tuberculeuses du fond d'oeil). Beissel and Pissavin, Nancy, France. Rev. méd. de Nancy 73: 309-10, Aug.-Sept. 1948.

In 103 cases of tuberculosis, there were 25 with chorioretinitis and 9 with optic nerve lesions. Choroiditis with relatively few nodules showed the best response to streptomycin; results were less favorable with true miliary choroiditis. In general the course of the eye lesions followed the course of the general disease.

Studies in Experimental Ocular Tuberculosis. XI. Effect of "Promin" and "Promizole" in Experimental Ocular Tuberculosis in the Normal Rabbit. Alan C. Woods, M.D. and Earl L. Burky, M.D., Baltimore, Md. Arch Opth. 40: 1-13, July 1948.

To enlarge on previous studies of these drugs, tests were run on normal rabbits by innoculating virulent human tubercle bacilli into the anterior chamber. After two weeks, when evidence of ocular tuberculosis first appeared, the animals were divided into three groups. One group was treated orally with "promin", one with "promizole", and one was not treated. Blood concentrations of the drugs were found to be low. After the second week of treatment, disease in the treated rabbits was less active than in the other group. This lessened activity continued to be apparent throughout the course of the experiment, which lasted 17 weeks.

The deterrent action of the drugs was only slight. Examination of the results of this experiment and of the similar experiment on immune-allergic rabbits indicates that "promin" and "promizole" probably have a limited effect on the tubercle bacillus, this action becoming clearly evident only when the tuberculous process is so restrained by a systemic immunity that it is brought within the therapeutic range of these sulfone compounds. 1 reference. 9 figures.

Miotic and Antiglaucomatous Activity of Tetraethyl Pyrophosphate in Human Eyes. W. Morton Grant, M.D., Boston. Arch. Ophth. 39: 579-86, May 1948.

Tetra-ethyl pyrophosphate is a colorless, water-soluble and lipid-soluble, hygroscopic liquid of low volatility. It is usually effective at lower concentrations than is physostigmine or di-isopropyl fluorphosphate. The lethal dose in experimental animals is comparable to that of physostigmine. It penetrates the skin readily. Its notable cholinesterase-inhibiting action and ready penetration of the eye without injury suggested its usefulness in human glaucoma.

Tests on human eyes included an estimate of the animal effective concentration to produce miosis in several normal subjects. The threshold is of the same order as for physostigmine and di-isopropyl fluorophosphate, between 0.001% and 0.005% in normal saline. The maximum concentration tested was 0.1% in saline. In addition to miosis this produced twitching of the lids, spasm of accommodation, aching of the eye and brow. Fifteen cases were treated. Most of them had failed to respond to other miotics. Results of

treatment: no corneal damage, no increase in aqueous flare, no systemic symptoms, miotic activity comparable to that of physostigmine and di-isopropyl fluorphosphate; lowering of tension in glaucomatous eyes; in certain eyes a rise in tension. In some cases it showed better results for lowering tension. It may be used where there is local sensitivity to other miotics. 6 references, 1 table.

Controversial Points in Penicillin Therapy of Ocular Diseases. Ludwig von Sallmann, M.D., with the Technical Assistance of Miss Jeanette Di Grandi, B.A., New York. Arch. Ophth. 39: 752-804, June 1948.

This intensive study is directed toward classification of certain contradictions and unsettled questions in various types of ocular penicillin therapy. The experiments are described, and certain conclusions suggested. The failure of penicillin to pass the blood aqueous barrier in adequate amounts during systemic therapy could not be related to a selective transfer through the ciliary epithelium or to a restraining effect of the epithelial membrane. It was shown rather to be related to the functional states of the capillary wall, to the steep decrease in the drug level in the blood by rapid renal excretion, and in a moderate degree to the speed of absorption of the substance from the aqueous. In view of the experimental results there is reason to believe that for severe ocular infections the best opportunity for utilizing systemic penicillin is with massive doses plus local instillations of vasodilators. Local penicillin may be used also. Frequency of local instillations can be reduced, since activity in the tears usually lasts eight hours.

Ocular iontophoresis with penicillin was studied. Claims of poor conduction of the drug and of a substantial destruction of it was disproved. When solutions of low tonicity were used much more of the drug appeared in the aqueous, owing, however, to corneal damage. Palpebral iontophoresis was found to be of little value. These experiments on intra-ocular injections of penicillin verified previous work in other laboratories. One outstanding observation was that crystalline penicillin K caused severe retinal damage. The conclusion was that one should use sterile, highly purified penicillin relatively free of penicillin K for intra-ocular use. 70 references. 19 tables.

The Value of Anticoagulant Drugs in Thrombosis of the Retina. Bengt Rosengren, Eye Clinic, Gothenberg, Sweden. Acta Med. Scand. Suppl. 206: 212-16, 1948.

The value of anticoagulants in expediting recovery in cases of retinal thrombosis was studied with heparin and dicoumarol. A group of 30 patients was given 2 injections of heparin, 250 mg. each, daily for ten days. Average vision improved from 0.24 to 0.38 during treatment but dropped a little afterwards. Dicoumarol was given 32 patients for an average treatment of 24 days each. Prothrombin index was below 60. A first dose of 0.25 to 0.50 Gm. was given, subsequent doses being given at two day intervals, usually

0.125 Gm., depending upon the prothrombin index. Vision improved from 0.22 to 0.36 during treatment. Ophthalmoscopic examination of the heparin cases showed little, but edema and hemorrhage decreased in all but 1 case given dicoumarol and that patient was restored to normal after treatment for 18 days. Inspection of the actual site of thrombus in 6 patients showed that a small amount of thrombolysis occurred in 3 after about four weeks. This study indicated that anticoagulants do not usually produce thrombolysis in patients with retinal thrombosis. 2 tables. 2 figures.

A Case of Sensitivity to 0.5 Per Cent Pontocaine Instilled Locally. Thomas W. Cowan, Honolulu, T. H. Proc. Clin. Honolulu 14: 38-40, June 1948.

This patient was admitted for removal of a chalazion on the upper lid of the left eye. Two or 3 drops of a 0.5% pontocaine solution were instilled in the conjunctival sac every five minutes for 3 doses. A block was then placed around the chalazion with 1% novocaine injected in the lid, and the chalazion removed. Penicillin ointment 1% was applied to the conjunctival sac and a dressing applied over the eye. An intense local reaction characterized by redness of both upper and lower lids, conjunctival injection and an erysipiloid streaking, with severe itching on the temple and down the back of the ear, had developed by the second postoperative day. Patch tests on the arm for 0.5% pontocaine were positive but tests for sensitivity to penicillin and novocaine were negative. Local applications of many moist packs were directed and the eruption had completely disappeared four or five days later. 1 reference. 1 figure.

Antibiotic Treatment of Virus Diseases of the Eye (Az antibioticus kezelés eredményei a szem virusbetegségeiben). G. B. Bietti. University Eye Clinic, Pavia, Italy. Szemeszet 86: 26-9, March 1949.

Typical virus diseases of the eye such as herpes and epidemic keratoconjunctivitis do not respond to penicillin, streptomycin or tyrothricin treatment, even though given in high dosage locally. On the other hand, trachoma reacts favorably to frequent instillations of penicillin (1000 units per cc. 4 to 5 times daily). Generally after 72 hours the inclusion and elementary bodies disappear. Clinical improvement appears on the fourth or fifth day. As pannus is influenced better by oral administration of sulfonamides, continuation of the latter with local penicillin treatment is the best approach. The effect of streptomycin is much weaker. As p. amino benzoic acid is without effect on trachoma (Pasca), and its virus is sulfonamide sensitive, the Rickettsial origin of trachoma must be rejected. The virus, whether extra or intracellular, is penicillin sensitive. No result was obtained in hypopyoniritis, sympathetic ophthalmia, or pemphigus. Reiter's syndrome responds favorably to streptomycin injections. 71 references.—S. de Grósz.

#### 26. Comparative Ophthalmology

The Effects of Thyroxin on the Growth of Transplanted Eyes Relative to the Growth of Normal Eyes in Amblystoma Larvae. S. W. Handford, Brown University, Providence, R. I. Anat. Rec. 101: 712, Aug. 1948.

Eyes grafted in heteroplastic and homoplastic combination were removed from donors given synthetic thyroxin before operation in 1 to 1 million tap water solution for sufficient time to demonstrate the beginning of definite metamorphic changes in the gills, tail fin and keel. There were no metamorphic changes of the eye itself at the time of operation. All donors later died at metamorphosis. The relative growth of these precociously aged eyes is first retarded but eventually becomes normal. In some instances there are metamorphic changes in the iris pigmentation, but these are not consistent. No pupillary reflex develops in the engrafted structure but the skin taken with the graft from the treated donor thickens in all cases and forms an incomplete and nonfunctional lid.

The incomplete data suggest that changes induced in the eye by thyroxin are stopped and in some cases are even readjusted at a larval level when the eye is grafted onto a normal host.

Factors Controlling the Migration of the Proximal Pigment of the Crustacean Retina. L. H. Kleinholz, Reed College. Anat. Rec. 101: 665, Aug. 1948.

Injecting extracts of crustacean eyestalks (ES) or of the sinus gland from the ES into dark-adapted decapods moves the distal retinal pigment to the light-adapted position; more concentrated extracts similarly affect the proximal retinal pigment (PP) of the crayfish, indicating a higher threshold for the PP. There is greater complexity in PP regulation than is indicated by injecting experiments. The sinus gland was removed from 1 ES in 34 cravfish, the second ES being ablated at varying subsequent intervals. Six animals were kept in darkness and 28 in light. The ES were then ablated, fixed and sectioned. Of the former the PP of 5 was dark-adapted and in 1 was light-adapted; of the latter, the PP of 27 was light-adapted and 1 was irregularly light-adapted. The sinus gland of controls was removed from only 1 ES of 6 animals, the other ES being normal. Three animals were kept in darkness and 3 in light; histologic study of the operated ES showed the PP of each in normal characteristic position. Bilateral sinus gland removal was done in 13 animals; in 9 subsequently illuminated the PP was lightadapted while 4 others in darkness showed PP in dark position. There are either extra-sinus glandular sources of hormone or PP can respond directly to light and darkness.

X-Ray Therapy in Interstitial and Pigmentary Keratitis. W. G. Magrane, Mishawaka, Ind. North. Am. Veterinarian 29: 582-84, Sept. 1948.

Parenchymatous keratitis denotes inflammation of the substantia propria of the cornea, and is characterized by diffuse infiltration of the sclera and cornea. Corneal ulceration is rare, but there is almost always a uveitis. After initial irritative symptoms, one or more hazy patches appear in the cornea and spread so that the entire cornea is hazy, with a steamy surface. Corneal ophthalmoscopy shows beginning vascularization, involving bundles of brush-like vessels radiating from periphery to center. Objective symptoms include photophobia, pain, and usually suppuration. In man most cases occur in syphilitic patients.

The condition is generally bilateral in young dogs, and unilateral in old ones. A substantial number of cases progress into pigmentary keratitis. The usual sequel in dogs is blindness, but this is not true in man. Roentgen therapy was used on 15 dogs, with excellent results. Five illustrative cases are presented. A permanent cure was effected in all cases of the interstitial form. Pigmentation was checked or disappeared in the pigmentary form. By using 600 ma. seconds to the eye at reasonable intervals, no harm resulted and the dose was adequate. Each treatment includes 140 r units and this is repeated at four-day intervals for 4 to 5 treatments. One eye is lead-shielded during treatment. Riboflavin and vitamin A are dispensed for home use, and a mild eye wash is prescribed.

Hereditary Microphthalmia and Other Eye Defects in Pigeons. W. F. Hollander, Larson College, New Haven, Conn. J. Hered. 39: 289-92, Oct. 1948.

One of several pairs of Giant Homer pigeons repeatedly produced small-eved blind offspring. Systematic progeny tests of these birds and their descendants showed that this microphthalmia frequently recurred and was readily recognizable before hatching. The young were totally blind and had typical nystagmus. Analysis of the pedigrees and breeding data showed this condition to be a simple Mendelian recessive trait and not sex-linked. No abnormality could be found in the parents' eyes. Dissection of the eyes of the blind squabs showed the eveball to be of essentially normal construction though only about half normal size. There was a thickened choroid, a relatively small vitreous chamber, and an apparently defective retina. Other studies of the eve structure of normal Homer pigeons showed albino pigeons with nystagmus and otherwise visually handicapped. The dominant sexlinked almond color is another hereditary factor long known to be associated with the sporadic defect called bladder eve. The homozygous almond color is usually associated with defective iris structure and bladder eye, sometimes involving total absence of the lens. A recessive eve defect called "clumsy" because of its symptoms seems a rather minor retinal defect but is seriously handicapping. 8 references. 2 tables. 9 figures.

Experiments on Return of Vision in Transplanted Eyes of Salamanders. L. S. Stone, Yale University, New Haven, Conn. Anat. Rec. 101: 697-98, Aug. 1948.

When vertebrate eyes are grafted those of salamanders appear unique, for vision returns only in them. Since the sensory retina survives in larval grafts, the optic nerve quickly regenerates. The sensory retina degenerates in

adults. A new retina forms from the surviving pigment layer. A new optic nerve connects with the brain after two to three months and vision returns. In salamanders vision can return 4 times in the same eye repeatedly transplanted to new hosts. Eyes are successfully transplanted after seven days of refrigeration or they can be exchanged between hosts of different species.

The orientation of the graft determines visuomotor responses. Normal position of retinal quadrants produces normal visuomotor reactions to moving objects. Grafted eyes rotated 180 degrees show reversal of vision related only to those quadrants of the regenerated retina that occupy abnormal positions. Persistent abnormal vision can be made normal immediately by merely rotating the eye in situ back to normal orientation without injuring the regenerated optic nerve and retina. Experiments on rotated embryonic eyes show that the functional quadrants of the retina are determined in the early optic cup. If the eye is transplanted at this time to the side of the body, allowed to differentiate, and later in larval life is transplanted to replace a normal functional larval eye, it will function when its optic nerve first reaches

#### 27. Tropical Ophthalmology

See Contents for Related Articles

### 28. Hygiene, Prophylaxis, Occupational Ophthalmology and Injuries

Visual Manifestations of Injuries. Hill, J. C. Canad. M. A. J. 60: 464-68, May 1949.

The commonest type of injury to the optic nerve results from closed head injury without radiological evidence of fracture of the optic foramen. The impact is commonly directed against the forehead, or the external angular process on the side of the lesion; the effect is instantaneous loss of vision. If there is recovery it starts in three or four days, and is completed in four weeks. The visual changes are either complete loss of vision, a scotoma, or peripheral defect. The pupil on the affected side reacts sluggishly, or not at all, to direct light, but briskly to consensual light.

Over a three year period 25 cases of traumatic optic atrophy were seen, 9 followed a penetrating wound of the skull, 16 occurring after a closed head injury. Only three of the latter showed a fissure fracture of the optic canal. Three cases of optic tract lesion were diagnosed on the basis of the route of the projectile. They showed incongruous, hemianopic field defects; there was no apparent optic atrophy after three years. Twenty-five cases showed field defects due to involvement of the optic radiation or cortex. In 22 of these there was a penetrating skull injury. In one case the occipital region was only grazed by a machine-gun bullet; in one case a subdural hematoma was found. 7 references. 9 figures. 6 cases.

Four Cases of Ocular Chalcosis (Sur quatre cas de chalcose oculaire). Alain Belz, Folin and J. L. Bonnet, Lyons, France. Lyon méd 180: 599-602, Sept. 5, 1948.

A report is given of 4 cases of ocular chalcosis resulting from war wounds, in which the foreign bodies were not removed immediately. When foreign bodies were removed later, they proved to be copper. Even after foreign bodies were removed, the lesions of chalcosis did not subside. When the copper pigments and the pseudo-cataract are in the anterior portion of the lens, the vision remains at 10/10 for long periods, as in 2 of these cases. The vision is reduced when the posterior portion of the lens becomes involved and chorioretinitis develops, but as this is the usual course of ocular chalcosis, the prognosis is poor. Not all copper foreign bodies of the eye cause chalcosis; they may become encysted and then are like any inert foreign body. The best method of preventing chalcosis is the prompt removal of all foreign bodies from the eye, but if this is impossible, as it often is under war conditions, the patient should be kept under observation.

Another Case of Post-Traumatic Thrombosis of the Central Vein (Ein weiterer Fall von post-traumatischer Zentralvenenthrombose). V. Stöckli. Ophthalmologica, Basel 116: 123, Aug. 1948.

The patient, age 30, injured his left eye during work (splinter). Examination two days later showed reddening of sclera, vision 6/10 and, subjectively, pain and a shadow before the eye, or flickers of light when the eye was closed. The fundus appeared clouded in the region of the papillar surface. The arteries looked normal but the veins were obstructed and surrounded by blood clots, especially in the upper temporal and lower nasal regions. There were two small blood spots on the surface of the macula. The foveal reflex was normal, and pressure on the bulbus caused no pulsation in the veins. Liquemin was given intravenously to improve circulation in the eye. Within one week vein pulsation was restored. By the eleventh day, there was further marked lowering of vision due to sudden blocking of vein. Liquemin normalized the vein lumen, which led to resorption of the old blood clots and prevented further bleeding. Full recovery followed, with vision at discharge 6/3.5.

Penicillin or Silver Nitrate as a Prophylactic Against Ophthalmia Neonatorum? Conrad Berens and Franklin M. Foote, National Society for the Prevention of Blindness, Inc., New York, N. Y. Am. J. Pub. Health. 38: 1680-82, Dec. 1948.

Use of penicillin as a prophylactic in gonorrheal ophthalmia is still in the experimental stage. Sodium penicillin, 2,500 units in 1 ml. of sterile isotonic sodium chloride, was used first in 4 infants, and later single instillations as a prophylactic in 2,138 infants during their first three days. No known case of gonorrheal conjunctivitis occurred, but 1.5% of cases receiving a single instillation showed pus in the eyes before being discharged from

hospital. Staphylococci were found in the pus of 89% of these cases. Gonorrheal ophthalmia developed in 1 of 749 infants given routine silver nitrate prophylaxis, but this is not significant.

Cases of ophthalmia neonatorum will continue to occur because of carelessness in instillation of the agent or later introduction of infection. There is no evidence that 1 or 2% silver nitrate solution causes permanent damage to the eye. Use of paraffin-lined beeswax ampules containing 1% silver nitrate has eliminated danger of high concentration occurring in solutions left standing. It is felt that no change should be made in the use of prophylatics against ophthalmia neonatorum at this time but that research should be continued with silver nitrate, penicillin and possibly other antibiotics as preventives of ophthalmia neonatorum. 7 references.

#### 29. Illumination and Illuminating Engineering

Lighting and Visual Efficiency: The Present Status of Research. M. E. Bitterman, Cornell University, Ithaca, New York. Illum. Engin. 43: 906-22, Sept. 1948.

There are no technics for the evaluation of lighting in which complete confidence can be placed, and consequently there is a great need for fundamental research in this area. As yet there are no generally applicable methods for estimating the physiological cost of sedentary activities such as seeing. Many people erroneously measure visual efficiency in terms of output alone, ignoring input completely, yet performance often remains constant despite changes in the difficulty of working conditions.

Performance is a valid measure of efficiency only when the effort expended is constant. In "speed tests" experimenters instruct their subjects always to work at maximum effort and then assume that efficiency is proportional to achievement. "Fatigue tests" measure the effects of work at the central task upon achievement in some related activity which may be more readily measured; i.e., a maximum effort performance test is given before and after the visual work, less impairment being taken as an indication of greater efficiency in performing the central task. However, effort expenditure is rarely constant and there may be non-visual limitations on the speed of performance of a task.

The author analyses the bases for the illumination recommendations of Tinker, the British interior lighting code, and Luckiesh and Moss, pointing out the limitations therein which bring about the conflicting conclusions. Tinker's appears to be the most realistic of all the performance methods now employed. This discussion points out the need for a direct measure of physiological cost of work. Bitterman does not believe that heart rate is a sensitive indicator and thinks that Luckiesh and Moss's interpretations of their experiments in this field are in error. Blink rate technics so far have contained too many variables to be valid, but these experiments are now being refined. Muscular tension is the most promising index of efficiency in visual work at the present time.—E. Freyer.

#### 30. Ophthalmic Sociology

See Contents for Related Articles

#### 31. Education, History and Institutions

See Contents for Related Articles

#### 32. Miscellaneous

The Association of High Blood Pressure, and Increased Pulse Rate as a Manifestation of Hyperglycemia in Chronic Eye, Ear, Nose and Throat Conditions. E. H. Coachman, Muskogee, Okla. J. Oklahoma M. A. 41: 379-84, Sept. 1948.

Elevated blood pressure and fast pulse with a normal or subnormal body temperature are associated frequently enough with hyperglycemia to warrant doing routine Exton-Rose two hour glucose tolerance tests. The hyperglycemia will otherwise escape detection since in most of these cases single urine, postprandial, and 24 hour urines are negative for sugar. Since the fasting blood sugar is generally not elevated, the two hour test is needed to reveal the blood sugar curve. Overweight, short neck, and adiposity predominate in this group, and cataracts are so frequent that hyperglycemia is suspicious in the etiology. Two hour tests are indicated before cataract extraction and helps prevent intra-ocular hemorrhage in these cases.

Latent vertical phoria is constantly found in high blood pressure and fast pulse cases; upon inclusion of the vertical correction in their lenses, there is further relief of dizziness, photophobia, lacrimation, and asthenoptic symptoms, even after control of the blood sugar in non-cataract cases. In postoperative bilateral cataract cases having less than 3 D. difference in the refraction of both eyes, the photophobia, diplopia, lacrimation and asthenoptic symptoms are also relieved by a latent vertical phoria correction in their lenses. There is thus less hesitation in giving the post cataract binocular vision when the eyes can work together comfortably.

Latent vertical phoria is common in endocrine dysfunctions and it points to the endocrines nonspecifically as the seat of trouble. It should enter into the differential diagnosis in Ménière's syndrome, "sinus" and "sick" headaches, "loss of equilibrium", train and car sickness, and occurs in about 80% of routine refraction cases.

Hyperglycemia frequently causes chronicity in eye, ear, nose and throat conditions, especially in chronic sinusitis and cataracts. It is indicated in a high blood pressure with rapid pulse with a normal or subnormal temperature, even with negative urine and normal fasting blood sugar. 13 references. 1 figure.

#### 33. Book Reviews

Gonioscopy (La gonioscopie). Jules François, Louvain, Belgium. Société Belge d'Ophthalmologie, Belgium, 1948. 233 pp.

This monograph, published by the Société Belge d'Ophtalmologie, closely follows the teachings of Prof. Goldmann (Berne, Switzerland). It presents, in compact form, a synthesis of what is known in the study of the angle of the anterior chamber of the living eye. It leads to better understanding of the different physiologic and pathologic processes which directly or secondarily affect the angle of the anterior chamber. Gonioscopy does not solve all problems which are encountered, especially in glaucoma; the solution is not to be found only at an angle. If gonioscopy offers great promise, its reach is not boundless, and limitations are present which are discussed.

After a summarized expose of the anatomy and physiology of the angle, the technic of gonioscopy is presented, with a review of the normal morphology of the angle, followed by the headings: congenital anomalies, traumas, and tumors of the anterior segment. The study is continued with uveitis, and primary and secondary glaucomas, and ends by a review of postoperative gonioscopy.

The presentation of the book is excellent. In addition to some illustrations of known sources, the author offers a variety of original drawings including 48 in color. The bibliography is quite complete. The presentation is indeed a tribute to Belgian ophthalmology.—M. Loutfallah.

Keratoplasties (Les greffes de la cornée: Kératoplasties). L. Paufique, Lyon, G. P. Sourdille, Nantes, and G. Offret, Paris, France. Masson & Co., Paris, 1948. 359 pp. 135 illus.

This publication constitutes the 1948 memoir of the Société Française d'Ophthalmologie. In the foreword, an historical study is made. Then Sourdille discusses the perforating keratoplasty, which can be optical, tectonic, cosmetic and, more recently, therapeutic or trophic. Discussed in the contraindications are: aqueous and vitreous organizations and anterior synechiae (glaucoma, cataract and lens opacities are not really contraindications). The foremost indications are: traumatic leukomas (from acid, heat or explosion burns), scars of old ulcerations, keratoconus. Less favorable cases are: alkali burns, interstitial keratitis, and congenital and hereditary degenerations. The vascularized leukomas are not as poor in prognosis since the use of physical agents. The complications of keratoplasty include: infection, displacement, fall or necrosis of the graft, synechiae between the iris and the graft, which should be prevented or released early (iridectomy and air injection into the anterior chamber), or glaucoma.

Superficial keratectomies are studied by Paufique. They have reappeared since the advent of antibiotics. Their main indications are: superficial lesions of the cornea, traumatic or infectious (interstitial keratitis or neurotropic virus diseases). The technic of superficial keratectomy is discussed; it is nearly always followed by a fistulizing operation to prevent the loss of the graft or glaucoma. The biology of the graft is then discussed by Offret, the methods of obtaining the eyes, and their preservation at 4°C. The physiology and pathology of the graft follow. The study of the disease of the graft includes three types: early necrosis (which is rare), the clouding in the third week (which is sudden and unexplained), and the late changes of the graft (which are not reversible). In conclusion, the authors feel that keratoplasty is far from its final goal and that great avenues are open for future research. The presentation of the monograph is outstanding.—M. Loutfallah.

Ocular Signs in Slit-lamp Microscopy. *James Hamilton Doggart*, M.A., M.D., F.R.C.S., Henry Kimpton, London, 1949. 118 pp. 93 illus. (85 in color). 21s.

In presenting this work in English on Slit-Lamp Microscopy, Doggart has not attempted to compete with the monumental work of Vogt nor with the important contribution of Milton L. Berliner. However, he has given the postgraduate student an excellent introduction to practical slit-lamp microscopy of the living eye which is not burdened with too much detail but does give sound fundamental principles, excellent descriptions and beautiful illustrations. This book should be of interest not only to the postgraduate student but also to the practitioner who may not have time to consult the more extensive works.

Under the title of "Value of Slit-Lamp Microscopy", he points out its importance in diagnosis, prognosis and treatment and also correlates the use of the slit-lamp microscope with the more effective use of the loupe. His chapter on "Technique of Examination" is excellent as is his chapter on the "General Considerations of the Normal Eye." The description of corneal abnormalities is particularly illuminating and many of the most important slit-lamp findings are depicted. The descriptions and illustrations on the pathologic signs in the iris with the preceding chapter on aqueous disturbances should be read by everyone interested in uveal inflammation. The changes in the lens are well described. There is also a short chapter on the vitreous in which congenital abnormalities, effects of old age and inflammation are considered.

A bibliography is appended in which many of the more important references are listed, but no attempt has been made to correlate these with the text. This book can be recommended to students as an excellent introduction to the subject of slit-lamp microscopy and to the practitioner for a quick review of the subject as well as for ready reference.—Conrad Berens, M.D.

The Physiology of the Eye. Hugh Davson. The Blakiston Co., Philadelphia and Toronto. 1949.

An extensive experience in teaching medical students and graduates who are applicants for the Diploma in Ophthalmology has enabled Dr. Davson to present a valuable and much needed treatise on the physiology of the eye. Most such textbooks are intended for advanced students and research workers, are too complicated and assume a knowledge of formulae and physics not possessed by the average medical man. The present volume gives as much technical detail as is necessary to a thorough understanding of ocular physiology.

Section I deals with intra-ocular dynamics and the transparent media. The mechanism and control of intra-ocular tension and the composition and formation of the aqueous is clear and concise. Section II presents the structure of the retina, the general aspects of vision, photochemistry, adaptation and color vision. The latest researches on these subjects are discussed. In section III, the action of the extra-ocular muscles is clearly portrayed and such subjects as torsion, the nervous mechanism of control, pupillary behavior and accommodation are set forth in scientific and understandable fashion. Section IV deals with the visual perception. The pathways are outlined; the projection of the retina in the cortex, monocular perception, and stereopsis are well presented. This is a very important chapter. The author is somewhat apologetic for Section V because so many texts have been written on physiologic optics. Here, in a little over one hundred pages, is all the physics, optics and mathematical formulae needed by the well-informed clinician. The 301 illustrations which amplify the text add greatly to a well written and informative book which should long remain a dependable source of information on this fundamental subject—physiology.—Eugene M. Blake.

Practical Orthoptics in the Treatment of Squint. T. Keith Lyle and Sylvia Jackson. H. K. Lewis and Co., Ltd., London, 1949. 3rd ed. 271 pp.

T. Keith Lyle is a prominent British ophthalmologist who holds many important hospital posts and is a consultant in ophthalmology for the Royal Air Force. Sylvia Jackson, who collaborated in the writing of the first two editions of the text was, until recently, senior orthoptist in the Royal Westminster Ophthalmic Hospital. The first edition of *Practical Orthoptics* was published in 1937 and the authors have been actively engaged in the practice of orthoptics for many years.

As the title suggests, this work on clinical orthoptics has been written from a practical point of view. Theoretical considerations are presented very briefly. There is an interesting and brief historical review of orthoptic treatment touching upon the early use of the perforated masks recommended by Aegineta, Pare, and Bartisch; monocular occlusion suggested by Buffon; Wheatstone's invention of the stereoscope and Javal's extensive use of it. Donders is credited with pointing out the relationship of accommodation and convergence; and the more recent influence of the Maddoxes, father and daughter, and the contributions of Chavasse, Cantonnet and Fillozat is acknowledged. The classification and etiology of squint is a condensed version of that portion of Chavasse's work on the subject. The authors stress the desirability of adequate diagnosis before treatment is undertaken and they urge the necessity for the restoration of comfortable binocular vision as early as possible. The chief value of orthoptic training is "... to educate, or more usually to re-educate, the patient to develop his power and range of binocular vision". It is admitted that orthoptic training alone may not always correct the angle of squint but that surgical means may also be necessary. However, it is stated that surgical treatment of strabismus is unsatisfactory without the assistance of a detailed orthoptic investigation. The discussion of the various grades or levels of binocular vision and the development thereof is terse and clear. Anomalous projection is described quite adequately but the treatment suggested is very limited. There are many useful technics in dealing with anomalous projection which are not discussed. Diagnosis in squint and treatment (optical, orthoptic, and surgical) are presented quite completely. Heterophoria and paralytic strabismus, both congenital and acquired, complete the volume. Essentially, this new edition of Practical Orthoptics differs from the earlier ones in that heterophoria and paralytic strabismus are discussed at greater length, and instructive case records are added.

The book is profusely illustrated with pictures of instruments (mostly British-made), diagrams, stereoscopic cards, types of occluders, and photographs of patients showing various typical anomalous deviations in the different diagnostic directions of gaze. Numerous case histories with detailed accounts of the histories, findings, diagnoses and treatments are included. At the back of the book is a helpful Glossary containing derivations and definitions of commonly used terms. A remarkably brief bibliography contains only 16 references. Appendix I presents the standards for the discharge of patients as orthoptically satisfactory. Relief of symptoms with single binocular vision for distance and near with good visual acuity and adequate fusional reserves are the chief requisites. Appendix II contains a description of new instruments for the investigation and treatment of binocular anomalies, particularly the Lyle Synoptaphore and the Synoptiscope. Finally, there is a comprehensive Index which facilitates the location of the page numbers of various topics and their subdivisions.—R. E. Bannon.

Clinical Orthoptics. Mary Everist Kramer. The C. V. Mosby Co., St. Louis, Mo., 1949. 475 pp. 147 illus. \$8.00.

Clinical Orthoptics is the first book on orthoptics written by an American technician and as such fills a need which has increased with the growing interest in this field in the United States. The first 150 pages cover Anatomy, Visual Pathways and Oculomotor System, Physiology, and Optics—all sub-

jects in which a basic knowledge is necessary in order to understand orthoptics. The inclusion of this material (the first three chapters of which were written by Dr. Wade H. Miller) should be very helpful to the beginner, and more advanced students will find it a useful review.

Each chapter has about twenty questions on the material covered, as well as references and suggested reading, all very helpful in attaining a grasp of the subject. In her descriptions of procedures and techniques, Miss Kramer uses terminology which is in general usage, and in many instances includes alternate terms. The chapter on Instrumentation is particularly good in its description of the instruments and technics with many illustrations. Although other orthoptic technicians may differ at times with Miss Kramer in small details, the main theories and practical applications as Miss Kramer presents them are those now used by certified technicians in this country. Miss Kramer is to be congratulated on a real contribution to orthoptics and ophthalmology.—Marjorie V. Enos.

#### 34. Announcements

#### Central Illinois Society of Ophthalmology and Otolaryngology

#### Next Meeting November 18, 19 and 20, 1949

The next meeting of the Central Illinois Society of Ophthalmology and Otolaryngology will be held at the Abraham Lincoln Hotel in Springfield, Ill. on November 18, 19, and 20. Dr. William Benedict of the Mayo Clinic will give lectures on: "Cataracts and Systemic Diseases"; "General Diseases"; "Ocular Manifestations" and "Tumors of the Eye and Orbit". Dr. H. P. House, Associate Professor of Otolaryngology at the University of Southern California, will speak on the following: "Indications and End Results of Fenestration Surgery"; "Management of Otitis Media" and "Management of the Continually Stuffy Nose". Dr. Walter E. Owen, Peoria, Ill., a member of the Society, will speak on "Drug Therapy in Respiratory Allergy". Herbert M. Kobes, M.D., Director of the University of Illinois, Division of Services for Crippled Children, will speak on the "State of Illinois Cooperates with the Ophthalmologist and Otolaryngologist."

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The clerk who suffers from advanced presbyopia finds himself at a distinct disadvantage due to the nature of his work. Prescription of the proper trifocal helps him see stock on shelves, cash register keys, etc.

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There are more than 300,000 people wearing Univis Trifocals right now. Doctors are prescribing them at an ever-increasing rate. More than 50% of all presbyopes need trifocals. The great number of these who do not yet have them are awaiting your prescription for their complete visual comfort.

 Here is the Univis Trifocal Trial Set, for your use in demonstrating benefits of prescribing intermediate help. Reading additions are from 1.50 D. to 2.50 D. and intermediate segs are 50% of reading power. Available through Univis Prescription Grinding Laboratories or The Univis Lens Co., Dayton 1, Ohio.



For

OCCUPATIONAL

and

RECREATIONAL

Use . . .



AO Tillyer Ful-Vue Trifocals have been developed to help you provide clear vision in that troublesome 18 to 40 inch zone between "near" and "far" . . . so important in many occupational and recreational activities. FOR OCCUPATIONAL USE.

You've undoubtedly found that trifocals are invaluable for many people whose work calls for much "seeing" within a four-foot field. Prominent among this group are teachers, sales clerks, musicians, pharmacists, draftsmen, and skilled laborers. AO Tillyer Ful-Vue Trifocals can help you provide greater eye comfort and efficiency for these people.

FOR RECREATIONAL USE:

Clear intermediate vision is also becoming especially important to those with an increasing amount of leisure time—for bridge playing, sewing, crocheting, gardening, wood working, and many other hobbies. Your professional services, plus AO Tillyer Ful-Vue Trifocals, can add greatly to their comfort and pleasure.

When intermediate additions are indicated, prescribe AO Tillyer Ful-Vue Trifocals, incorporating the famous Tillyer corrected curves and other unique advantages.





FOR OCCUPATIONAL USE





FOR RECREATIONAL USE

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